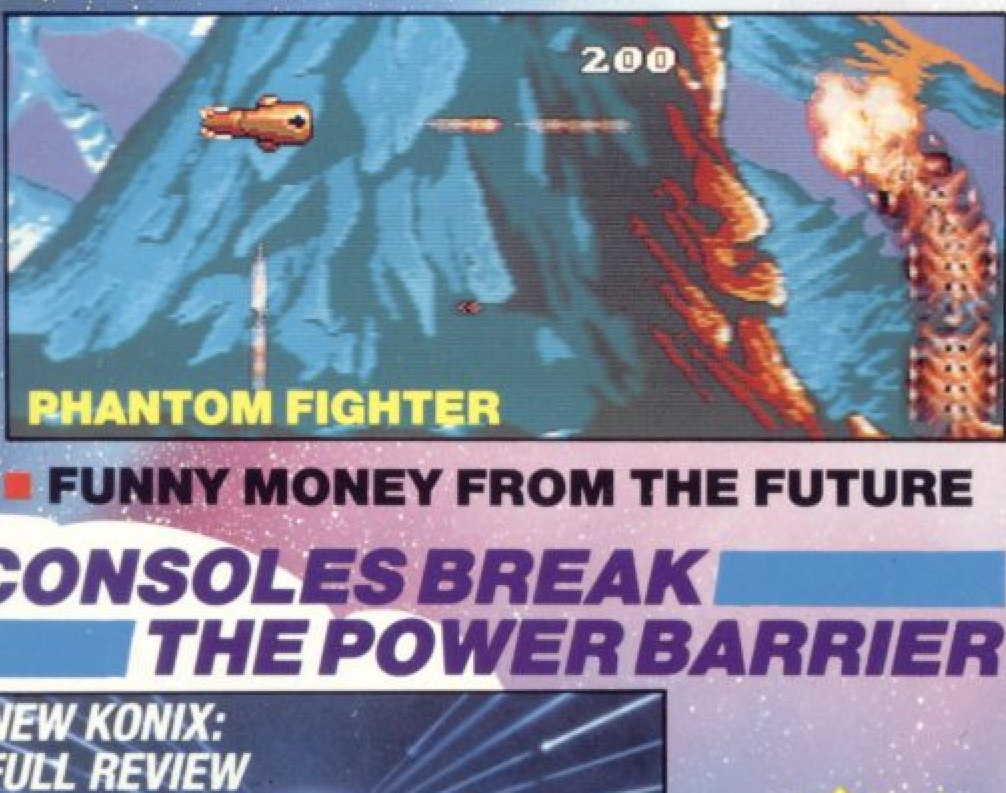
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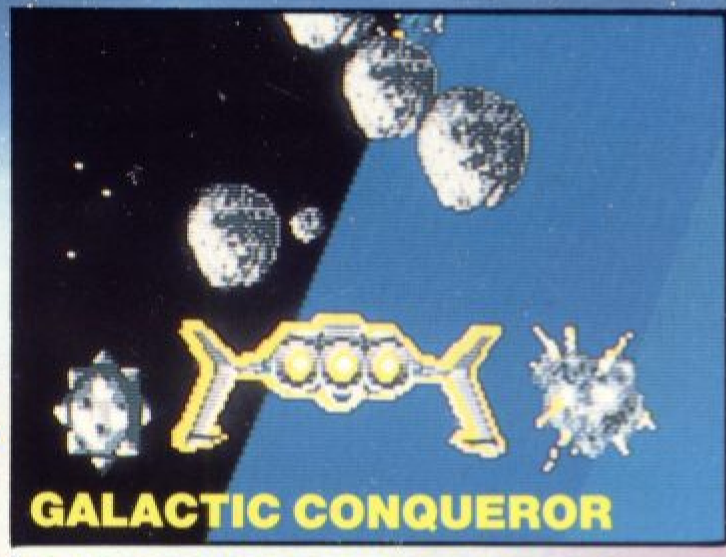
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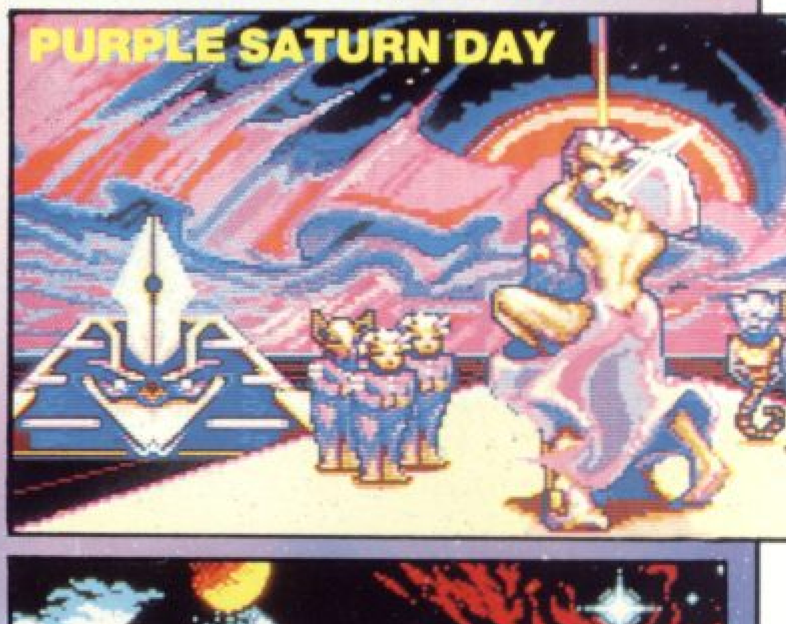
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PHANTOM FIGHTER


GALACTIC CONQUEROR


PURPLE SATURN DAY

■ FUNNY MONEY FROM THE FUTURE

CONSOLES BREAK THE POWER BARRIER



NEW KONIX: FULL REVIEW OF A DREAM MACHINE

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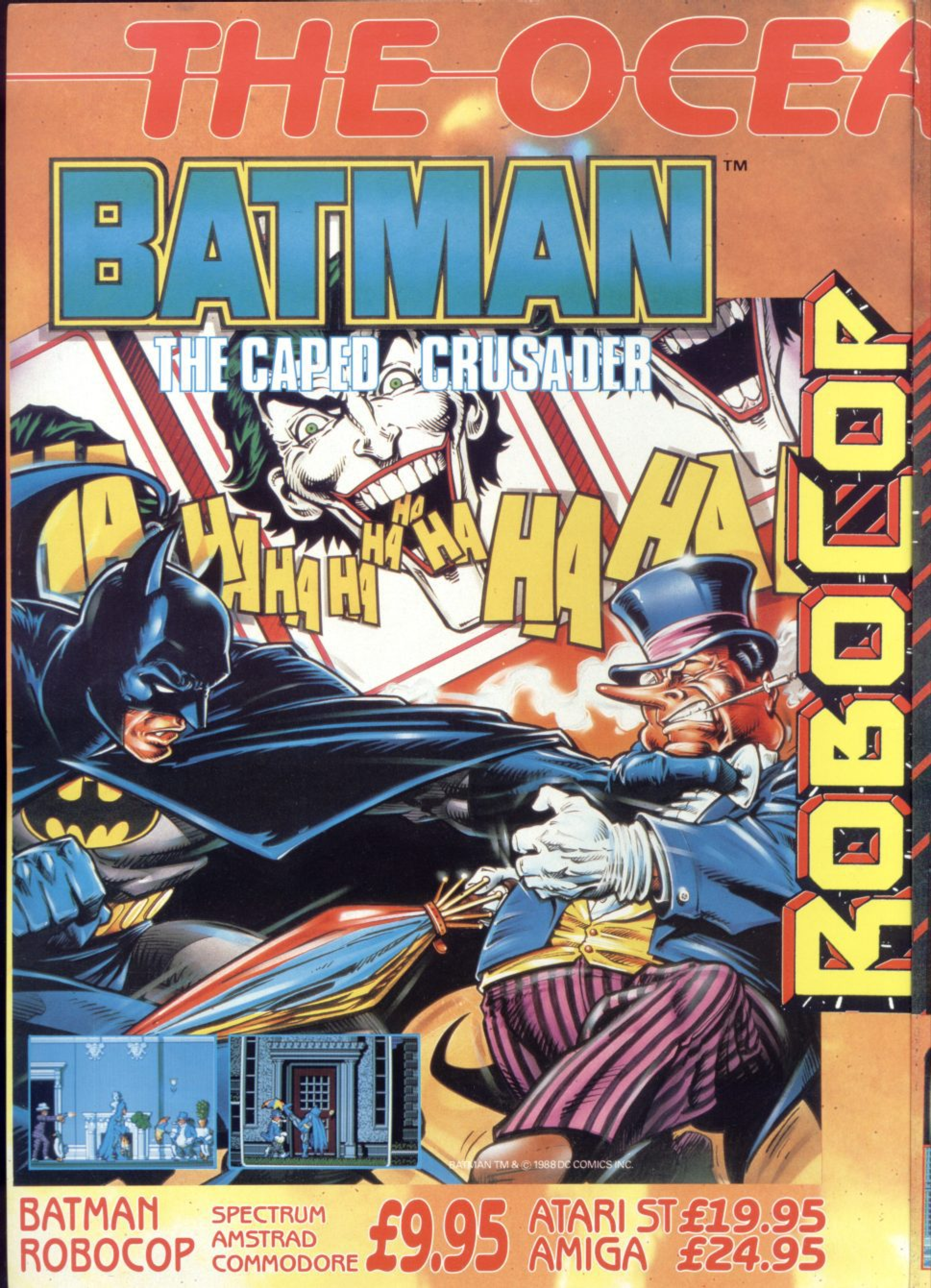

COSMIC PIRATE

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03

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The Games machine

THIS ISSUE . . .

WIN!

DIAL 0898 555080 AND WIN WEC LeMANS FROM OCEAN!

See page 80 for details

WIN!

A BLASTEROIDS ARCADE MACHINE

Plus copies of *Blasteroids* for the runners up.
See page 21

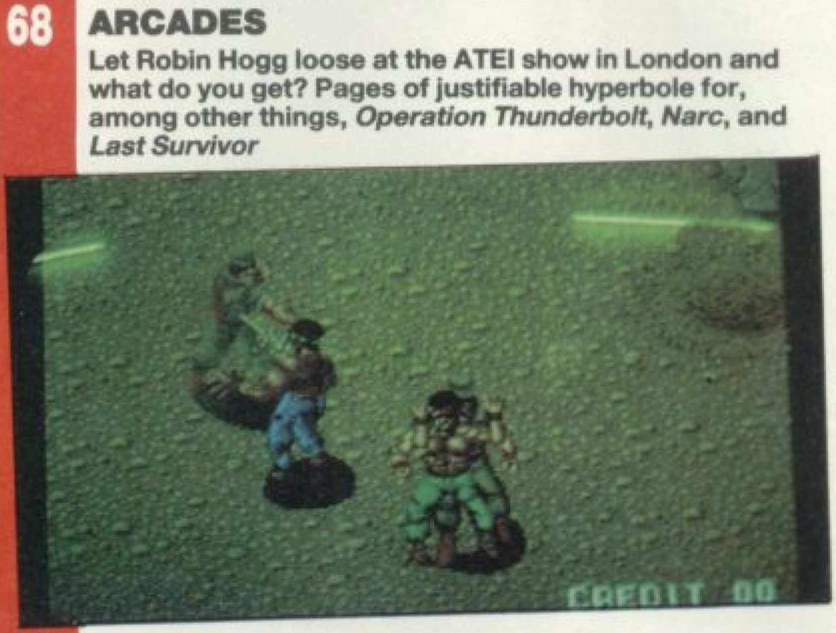


WIN!

LOTS OF CYBERPUNK GOODIES

***Neuromancer*-style books, videos and games.**
See page 66

REGULARS



A QUESTION OF CONSOLES

Who's going to win in the consoles war? I for one wouldn't like to hazard a guess, but if one thing is sure it's that the leisure computing market is extremely buoyant at the moment and rich with opportunities. The PC Engine has at long last arrived in the UK thanks to Micromedia, while Konix' Slipstream will be coming off the production line around the middle of the year. Both the Sega Mega drive and the Nintendo 16-bit look extremely promising, but their arrival in the UK is still a while off. There's never been a better time to be a computer gamer, and if there's one thing 1989 won't be – it's boring!

However, developments in the consoles department doesn't mean that home computers are standing still. Far from it. Witness *TV Sports Football*, this months TGM Top Score on the Amiga. 16-bit machines are only just starting to achieve their potential, but pretty graphics and nice sounds do not necessarily a great game make. So often we are seeing so-called 16-bit 'classics' let down by inferior gameplay. This is one area where 8-bit games *can* compete and, as letters this month testify, there are many who are crying out for the *fun* to be put back into computer games.

Stay with it

Jon Rose
Editor





FEATURES





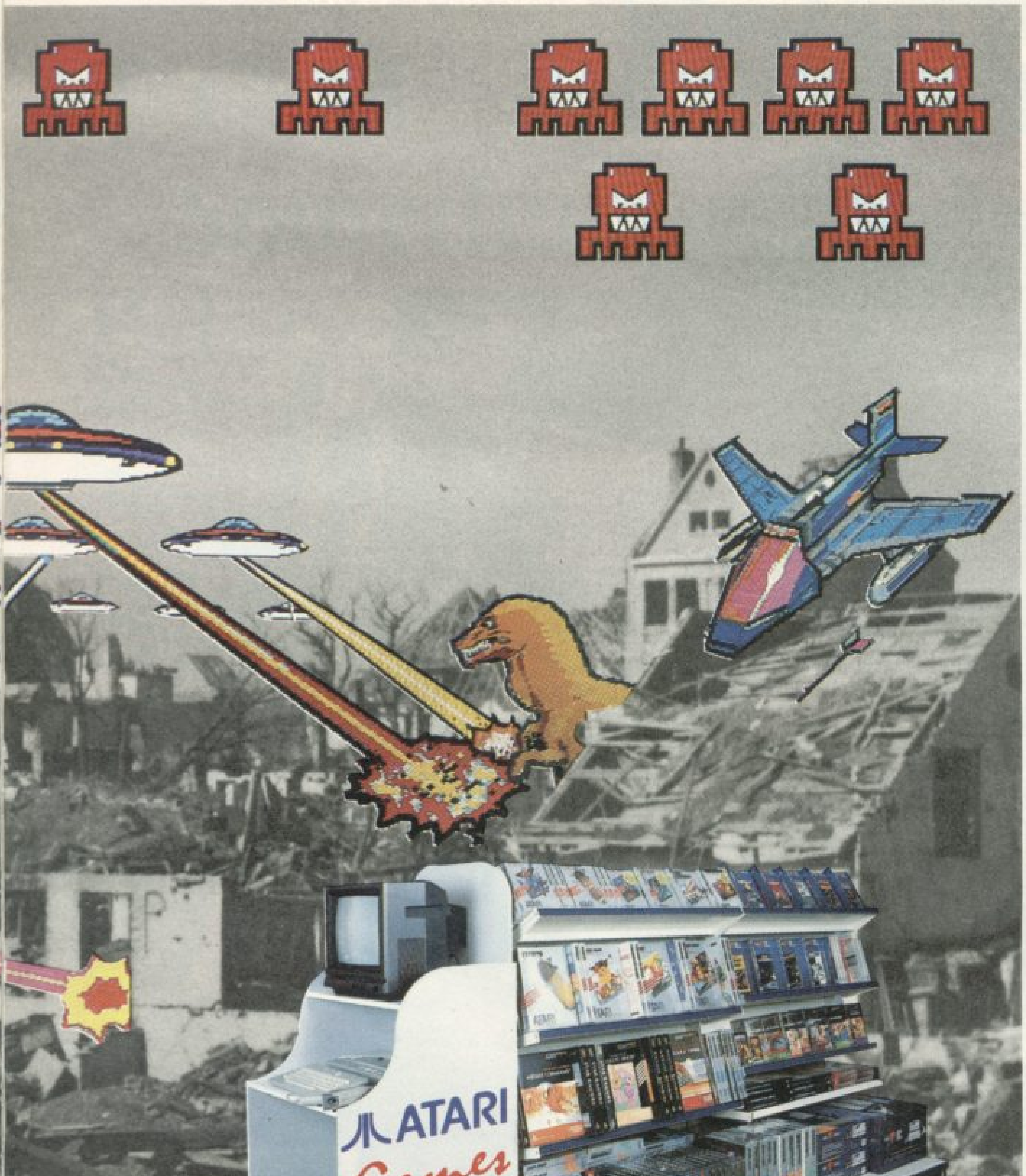
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TGM

Something nasty in the Palace

Outlaws are in for '89 as Palace Software and their Outlaw label line up a string of horrific heroes plus a 16-bit *Shoot-'Em-Up Construction Kit* (see box). First off the loathsome list comes *Cosmic Pirate*, an amoral space-piracy adventure.

Raiding cargo-laden space trucks and buying better craft with the profits, you'll soon have the chance to become the Lex Luthor of the Milky Way.

Dozens of different missions are offered in the humorous title from Zippo Games, who've contributed to many console and computer products in the past. Expect ST and Amiga release in February at £19.99, with CPC, C64 and Spectrum following – all on the Outlaw label, which Palace reserve for games written by freelance programmers.

Also from Outlaw comes *Astounding Astral Adventures* – that's only a working title – for the Amiga. Programmed by Thornton Software, the team which did special effects for the horror/comedy movie *High Spirits*, this sets you down as a suitably unpleasant mercenary on an ant-infested planet.

But there is a moral message hidden among the blasting, looting and ant-interrogation chambers: you could be the first mercenary ever to bring peace to a warring planet.

Astounding Astral Adventure will be on ST and Amiga.

Rob, steal

On the Palace label itself comes arcade adventure *Superthief*, by Dan Malone (*Sacred Armour Of Antiriad*).

The horizontal scroller, featuring complex backdrops, casts the player as a model of unsullied selfishness, robbing the future for all it's worth.

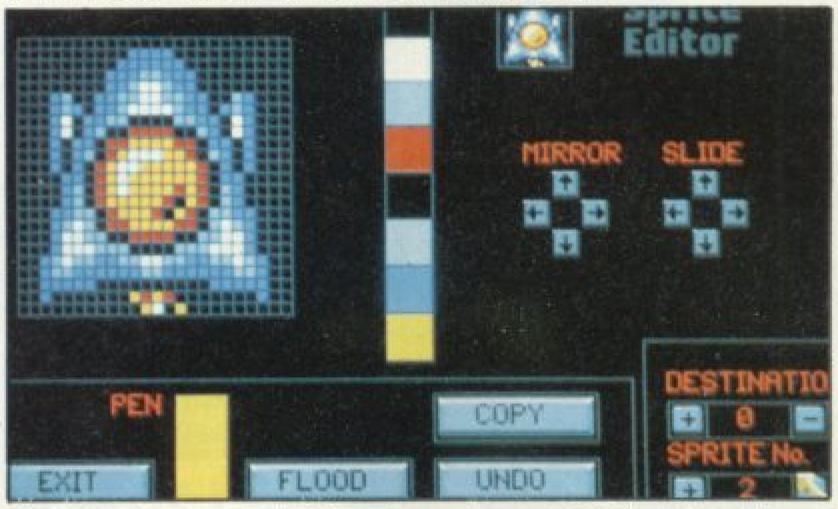
Malone's been working for over a year on the ST and Amiga versions, and 8-bit should follow. Palace hope for release later this year.

Other games on Palace's mean menu include *Monster Museum*, an arcade adventure with graphics by Gary Carr (*Barbarian*) and main programming by Andy Wilson (*Dan Dare*).

And for future-shock fans there's *Complex* – a police-training course of a distant century, with *2000AD*-style comic-book graphics actually created by a comic artist.



In a world of your own: gameplay, graphics and sound can all be created on Outlaw's Shoot-'Em-Up Construction Kit (Amiga screen)



Shoot-'Em-Up Construction Kit sprites can be up to 24x24 pixels, with seven different colours (Amiga screen)

SEUCKing up

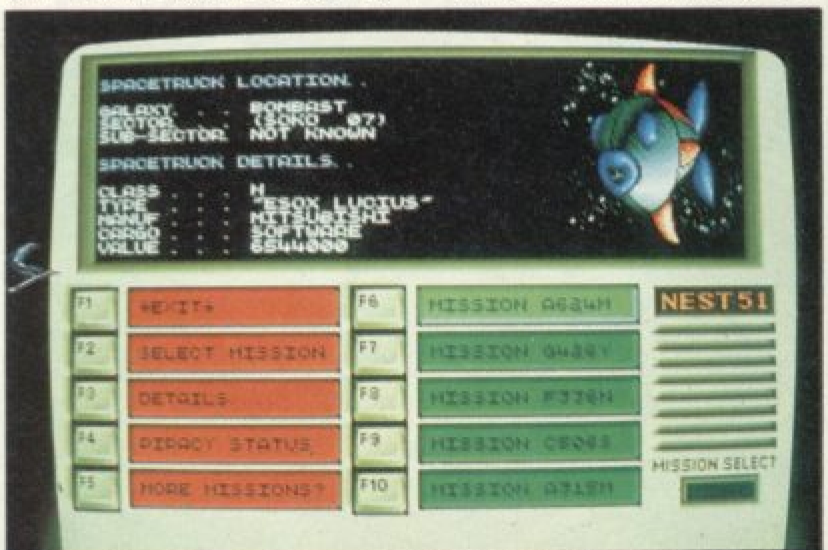
Imagine owning as many shoot-'em-ups as you wanted . . . and all for the price of a single package. It's possible with Outlaw's *Shoot-'Em-Up Construction Kit*, now set for release on ST and Amiga following its highly-acclaimed C64 incarnation by Superior Software.

SEUCK, as it's known, is an easy-to-use system for designing graphics, sound and gameplay on the classic shoot-'em-up model. Up to 100 different sprites can be created for each game, each with its own characteristics like strength and firepower.

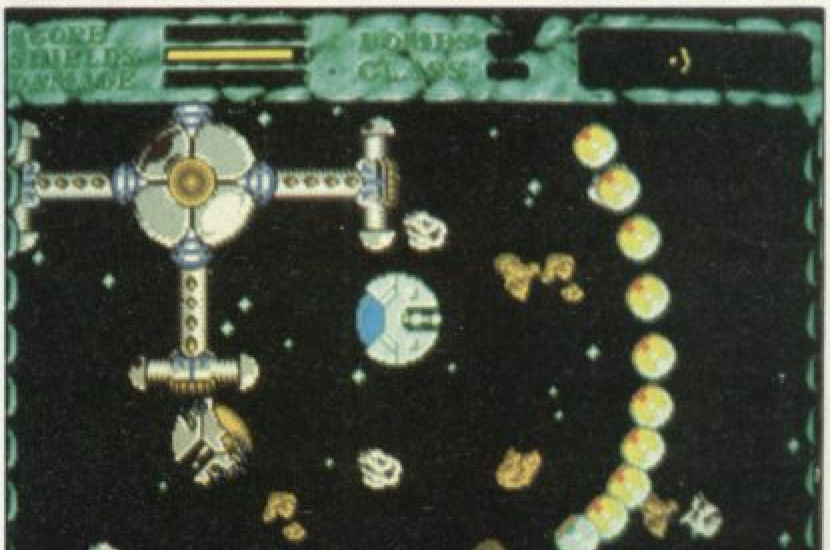
Backgrounds, weapons and so on are all designable too, at the pixel-by-pixel level – so every *SEUCK*-created game really can be different.

There's a built-in library of sampled sound effects, and if you have a sampler, IFF-format sample files can be used too. The package will also import IFF graphics files for title screens.

SEUCK should be available for Amiga in February and ST later this spring, at £24.99. Details here refer to the Amiga version; the ST package should be similar but hasn't been finished yet.



Micro mayhem: a realistic control screen from Outlaw's Cosmic Pirate



Cosmic Pirate (Amiga screen)

PRESS ANY KEY

God simulator from Electronic Arts



Movie-style space mission: Electronic Arts's Project Firestart (C64 screen)

Electronic Arts give you a chance to play god in their major 16-bit game for this spring – *Populous*. But creation continues all day elsewhere in the American software company, with titles like 'horror movie' *Project Firestart* and a hangarful of simulations.

Populous is a new twist on the old colonisation theme: two nations, each following a different god, struggle to populate new territories, evolve into civilisation and finally thwart their opponent.

As the god of one nation – the other can be the computer, or a player *on another machine* – you build cities, create soldiers and use acts of god like earthquakes and floods against the enemy. Hundreds of worlds are available, based on four different landscapes in 3-D detail; worlds can also be designed from scratch.

Not everything's under heavenly control, though – sea monsters and giant birds appear randomly to harass both nations.

And another innovative feature of *Populous* is its support for datalinks and modems, allowing you to play at long distance or and even against someone on a different micro (the ultimate ST/Amiga war?).

UK *Populous* programming team Bullfrog recently did *Fusion* for the same software house.

Amiga release of *Populous* is set for March and ST for April, both at £24.95.

Ferrari racing

Meanwhile, back on Earth, Electronic Arts's simulation series continues with the release of Amiga hit *Ferrari Formula One* on other major formats. The driving/team management game simulates a Ferrari F1/86 on 16 different tracks in a detailed recreation of the 1986 Formula One season.

The ST version is due in March at £24.95, with C64 following in April and PC, CPC, and Spectrum all on the cards too.

Also due on the ST is *Skyfox II: The Cygnus Conflict*, 'simulating' an imaginary warpfighter of the future. Besides a new plot, Electronic Arts claim this one has faster action and a more realistic flight feel than the original *Skyfox*.

The playing area has been enlarged, too, to cover more than 50 starbases. Expect ST release in March at £24.95.

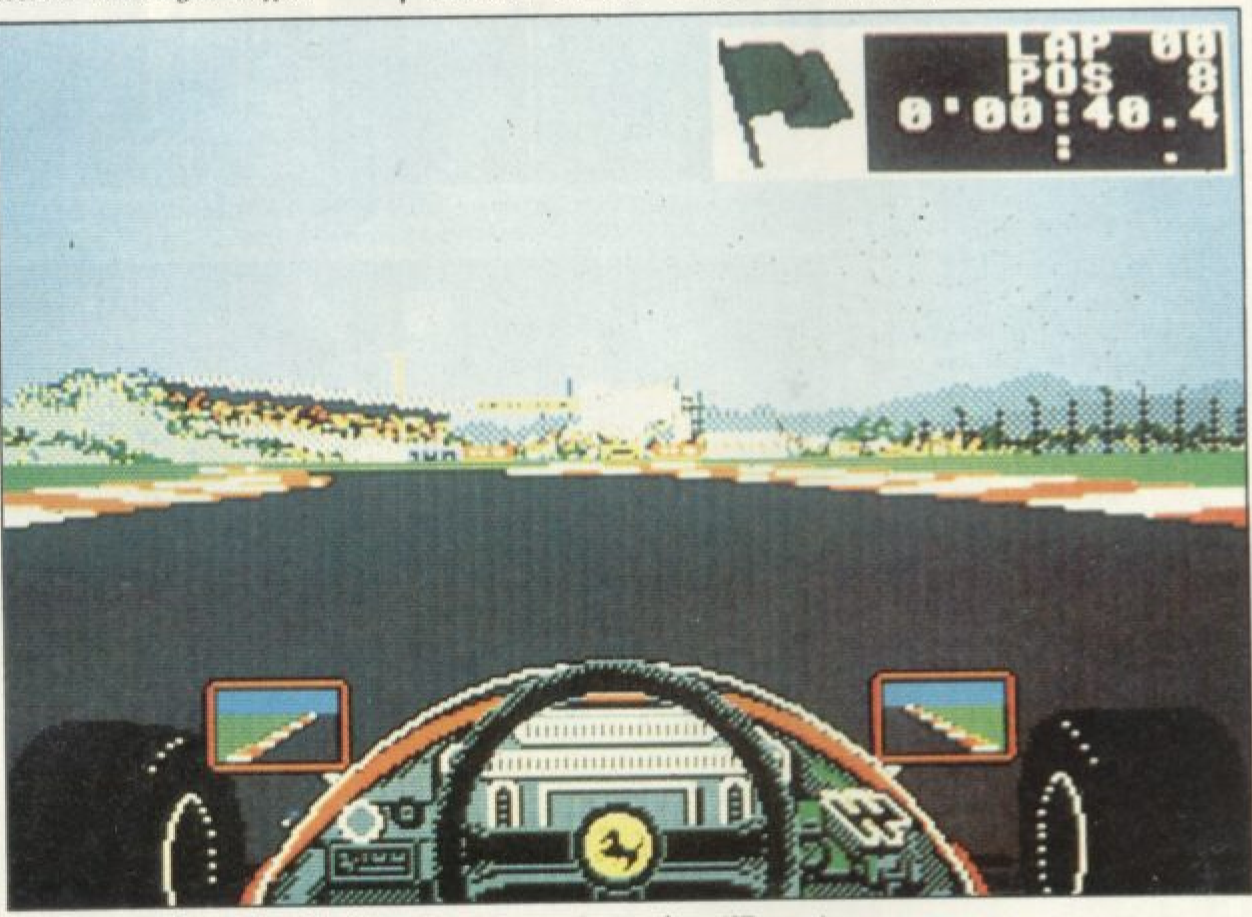
Chuck up

8-bit isn't being ignored, however. *Chuck Yeager's Advanced Flight Trainer*, already available on C64, should be on CPC now or very soon, with Spectrum following in March.

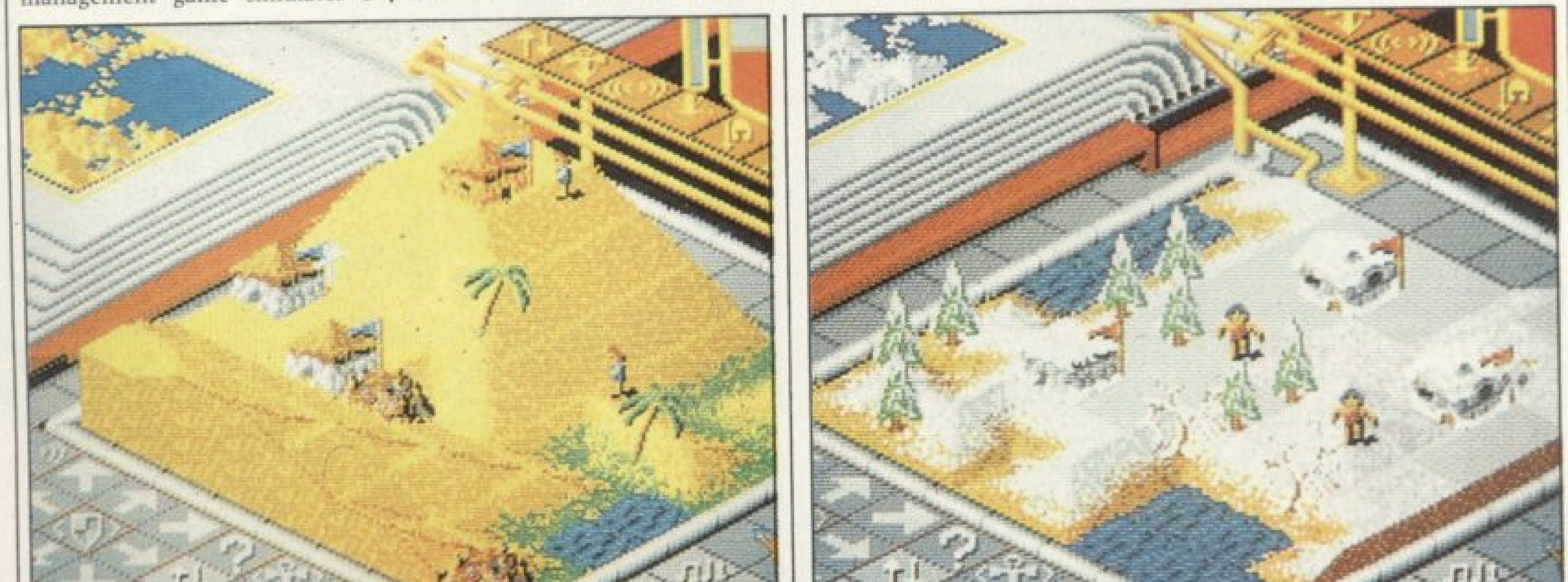
This sim, which the eponymous American General Yeager says 'takes the terror factor out of test-piloting', coaxes the player through three stages of flight training, leading up to formation flying across 3-D terrain and aerobatic obstacle courses.

After that it's time to tackle racing.

And for the difficult-to-terrify, there's also a test-pilot section, where you can choose from 14 air-



En route: Electronic Arts's Ferrari Formula One, soon for ST release (ST screen)



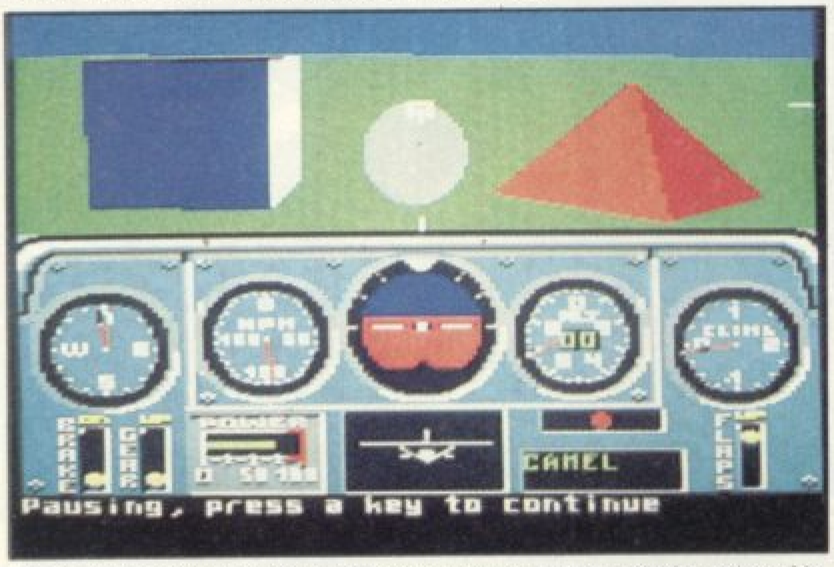
A whole new world of opportunity: zoom to any point on the hundreds of worlds in Electronic Arts's Populous (Amiga screens)



Bigger and better: Skyfox II from Electronic Arts, on the ST in March (ST screen)

craft old and new – ranging from the Sopwith Camel F-1 to the F-18 or an experimental craft.

■ Just out from Electronic Arts is *Project Firestart*, a film-style space-rescue thriller for C64 disk only. Close-ups, fades and movie music add to the atmosphere of the mission set in an out-of-control spacecraft.



Death-defying: Chuck Yeager's Advanced Flight Simulator, soon for major 8-bits from Electronic Arts (CPC screen)

Lord of the rings for £2.99

The field seems almost empty of big sports names as software houses scramble to sign them up.

After Grandslam Entertainments snapped up Liverpool Football Club for an all-formats licence sometime this year, Newcastle-based budget house Zeppelin Games aimed at . . . darts star Jocky Wilson.

Jocky Wilson's Darts Challenge will be an 8-bit budget title, but Zeppelin are also moving into full-price with a new label, Kognito. Watch this space . . . for a shove-ha'penny champion, perhaps?



Zeppelin: Jockying for position. Darts star Wilson is seated first from right.

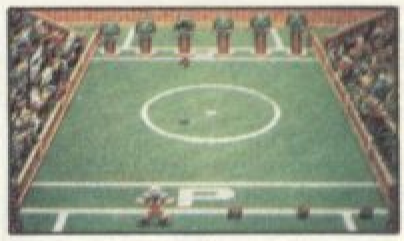
Grand slam entertainment

No, they're not trophies for nastiness – Golden Goblins is the new arm of German software house Rainbow Arts, and they're set to troll over to Britain this April, when US Gold will release sadistic sports game Grand Monster Slam.

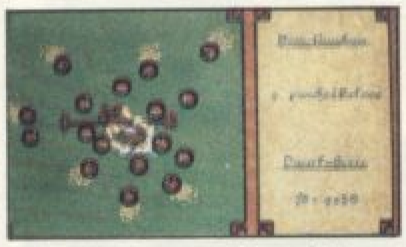
The charmingly ugly sprites and imaginative events of Grand Monster Slam had the TGM players going horns over hooves with laughter, as they kicked heads across a field to the cheers of misshapen orcs. Two subgames provide variety and qualify you for higher levels of the main game.



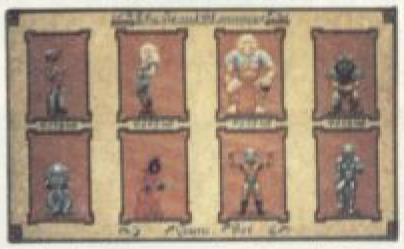
Getting a head: notice the crowds in Grand Monster Slam's main game



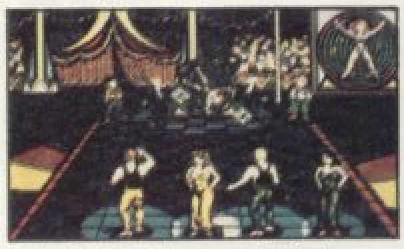
Open wide: kick carefully to get the right trajectory in Grand Monster Slam's qualification round



Pole position: pushing 'beloms' aside in Grand Monster Slam's interlude game



Spitting images: the Grand Monster Slam players



Wheel of misfortune: knife-throwing in Circus Attractions



Balls up: juggling dangers in Circus Attractions include elephants and dynamite

Also coming from Golden Goblins is Circus Attractions, following Tynesoft's Circus Games and Martech's Circus, Circus along the suddenly much-used tightrope.

■ The next Rainbow Arts release from US Gold will be Spherical, a spell-casting arcade adventure featuring more than 100 levels. C64, Amiga, PC and ST versions are planned.

Alternative go 16-bit

Fresh from last autumn's launch of Again Again, Alternative Software are going into 16-bit with a couple of titles for ST and Amiga.

Mad Flunky, programmed by Don Priestley, is a humorous arcade adventure set in the Royal household – a 16-bit version of Piranha's 8-bit *Flunky* by the same programmer, released some 18 months ago.

Mad Flunky is on ST only, but Amiga mania arrives in *Wrangler*, a space puzzle game with 32 levels and 288 screens. (An ST version is also available, of course.)

And also set for 16-bit release is *Mystery Of The Indus Valley* for the ST. All Alternative's 16-bit titles will cost £14.95; screenshots soon.

UMS sequel

A *UMS II* is lined up for the combat – but it won't be coming from Rainbird, who released the original wargame construction kit *Universal Military Simulator* last year.

Instead the sequel to the highly-acclaimed strategy classic (TGM**003**) will be brought by SSI, midyear.

PRESS ANY KEY

First CD-ROM game from Cinemaware

Cinemaware have announced the 'first ever' CD-ROM computer game – *Defender Of The Crown*.

The emphasis of the CD-ROM version is on sound, with a stereo, fully-orchestrated soundtrack, souped-up effects and spoken dialogue.

But so far the CD-ROM version will run only on PC-compatibles, and of course an expensive CD-ROM drive is required too. The game, which should be out by the time you read this, costs £49.95.

This isn't the first time CD-ROM has been used for games: the PC Engine console from Japan's NEC, featured next issue, also has an add-on CD-ROM drive.

On the PC Engine, the CD-ROM storage method – which uses disks like music CDs to hold up to 682Mb of data – is used for sound effects and the very long programs of faithful arcade conversions.

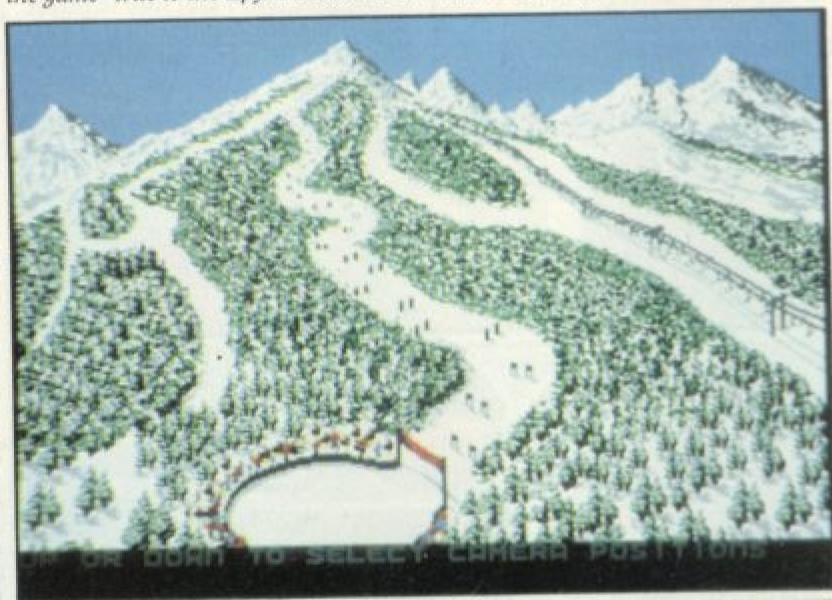
Cinemaware: contact Mirrorsoft, *Headway House, 66-73 Shoe Lane, London EC4P 4AB* ☎ (01) 377-4645.



Defender Of The Crown: king on CD-ROM



The snow goes on: Epyx are back on winter's tail with The Games – Winter Edition, now available on 16-bits (ST screen). TGM009's original review called the game 'true to the Epyx standards' shown in seven different Games games.



US Gold get a wacko licence



Michael Jackson: going to Gold

US Gold's *Mad Mix* tie-up with Pepsi has really pepped up the Birmingham-based software house – because it led them to the licence for Michael Jackson movie *Moonwalker*. Superstar Jackson is well-known for advertising Pepsi's eponymous cola.

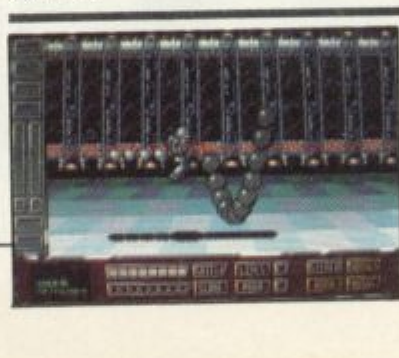
Set for autumn release, the game will presumably feature plenty of Jackson tracks, and the movie's science-fiction theme makes it a more suitable candidate for computerisation than US Gold's last film star – Charlie Chaplin.



At last, Sega's classic beat-'em-up Shinobi is set for life on all major 8-bit and 16-bit formats, from Virgin Mastertronic.

Using ninja magic, exotic weapons and good old-fashioned muscle, you battle through five missions (19 levels) to free a horde of trapped ninja brats. Detailed graphics, nonstop kicking and some terrific end-of-level obstacles (how about a huge helicopter full of ninja nasties?) make this a game with punch.

C64 programmers are Random Access, who also appear on these preview pages with Silkworm; ST, Amiga, CPC and Spectrum versions come from Binary Design. Sadly, no news of a PC version yet. But when you wish upon a shuriken . . .



Very moving: multidirectional, multilayer scrolling is the distinguishing feature of slaughtering shoot-'em-up Guardian Moons, out on ST from Microdeal

War in the Pacific

'Black objects suddenly floated eerily from their wings . . .'. That was a Japanese naval commander's recollection of the US airborne attack at Midway in June 1942, a pivotal victory in America's war against the Japanese.

Now Lucasfilm Games – producers of Zak McKracken And The Alien Mindbenders, reviewed by adventure columnist Rob Steel this issue – are simulating the air combat of the Pacific War with Battlehawks 1942, due for PC release late March or early April. Other 16-bit formats will doubtless follow (both screens here are PC).

Players can take either side in four different battles, and choose from three kinds of plane for each opposing force (fighters, five bombers and torpedo bombers). Each battle features different missions, and training flights are available too.

Packaged with a beautifully-produced 128-page manual containing colour maps and authentic photos, Battlehawks 1942 adds a fascinating historical dimension to the welter of flight sims recently released.



City slicker: look out for violent gang warfare in Virgin Mastertronic's Street Fighting Man (PC EGA screen; release date not set)

It will also, no doubt, benefit from the publicity given to Japan's Second World War role since Emperor Hirohito's death in January.



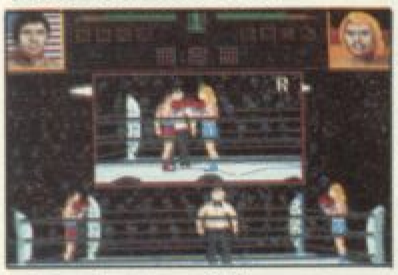
Training's over; this is the real thing



Battlehawks 1942: we're banking on it

Rocky role

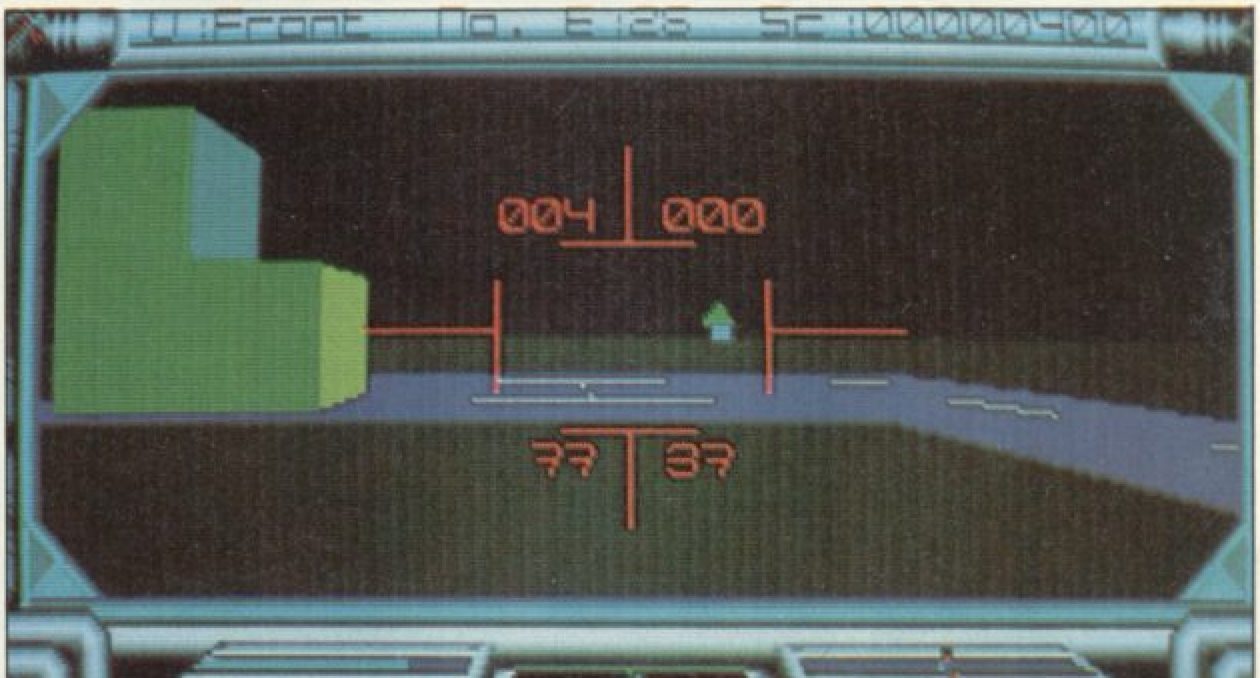
Swiss software house Linel give you a Rocky Balboa for your own home in The Champ – though it's not a licence of the movie, this glovely boxing sim features theme music from the Sylvester Stallone hit!



Rocky in a different way is Dugger, the latest episode in the life of tunnel-digging Herbie Stone, the computer character from Crack.

ST and Amiga versions of both are imminent, and PC may follow.





Solid space: pilot a sophisticated ship through ten 3-D levels in Orion's Belt from Ocean. Innovative features of the Saturn shoot-'em-up include remote-control robot cameras to see beyond the 'boundaries' of the screen. Expect ST and Amiga release in March (ST screen).

Games ghouls play

As software houses bid for the Nightbreed licence, Andrew Ritson gets to grips with gruemaster Clive Barker

Just when you thought the last nightmare had struck and the final bead of sweat has dropped onto the bedsheet, another bat out of hell flaps its wings disguised as an innocent blue-eyed boy of 36 – Clive Barker.

When publishers Fontana harnessed his fertile imagination in a £2 million deal, one of the results was *Cabal*, a novella crammed sardine-tight with bizarre themes like the image of a women falling in love with a dead man. It was first published, in paperback (£2.95), at the end of January.

Cabal is already en route to the big screen – filming starts in March on the movie, entitled *Nightbreed* – and then it's set to stretch its grisly hand onto the computer screen.

The film's producers and special-effects company Image Animation have been talking to a few top software houses, including US Gold, and a licence deal should be announced in February. The game will probably be under the name of the film, to avoid confusion with the TAD coin-op.

The game will be 'basically an outline taken from the movie', says Barker, 'about two warring elements – the human beings, cops and the psychoanalysts. The 19th century monsters who are the shapeshifters and transformers; creatures which have developed from werewolves and vampires.'

And Barker hopes the game will bring his name home to more than the blood'n'gore fraternity of horror fans. In fact, 'I would prefer it if people played the game first', he says. 'There's a lot of illiteracy around and I think we should leave the book on the shelves for people to buy it if they want to.'

Death dealing

Competition to purchase the game rights came from all directions. And though US Gold approached him first, he's not just out for the best financial offer.

'I want someone genuinely creative,' he says, 'who can create a game which is as visually arresting and as complex as possible.' And though he confesses to being 'antitechnological', Barker's well familiar with the micro's potential – his brother is a game-designer for Liverpool-based Synopsis.

The player will be the 'hero of the night' Boone, whom Death denies. It shifts from him and he ends up not in Heaven, not in Hell, not on Earth, but in Median: 'that awful legendary place which gathered into itself, its monstrous embrace the half-dead, the Nightbreed'.

But just how monstrous can you get? When software boomed in 1982, a game of *The Evil Dead* materialised, bringing with it the question of censorship.

'Certainly I think there's got to be [some restrictions],' says Barker. 'Censorship opens a whole can of worms. The film-censorship lobby has genuine anxieties.

'*Cabal* contains a lot of explicit sex and violence.'



Clive Barker: can we stomach him?

Barker's technique of opening up the imagination involves scalpel-clean prose, injected with powerful images. One which remains glued within the reader's memory comes from *Cabal*:

> *Narcisse's gut uncoiled, falling like a flesh apron to his knees. 'Help me,' he hollered, 'I'm coming undone.'*

'I don't know whether I want to open up *that* part of the imagination in a ten-year-old,' he says. 'I don't think it's a good thing for preschool minds to be subjected to my stuff. In fact I'm damn sure it's not.'

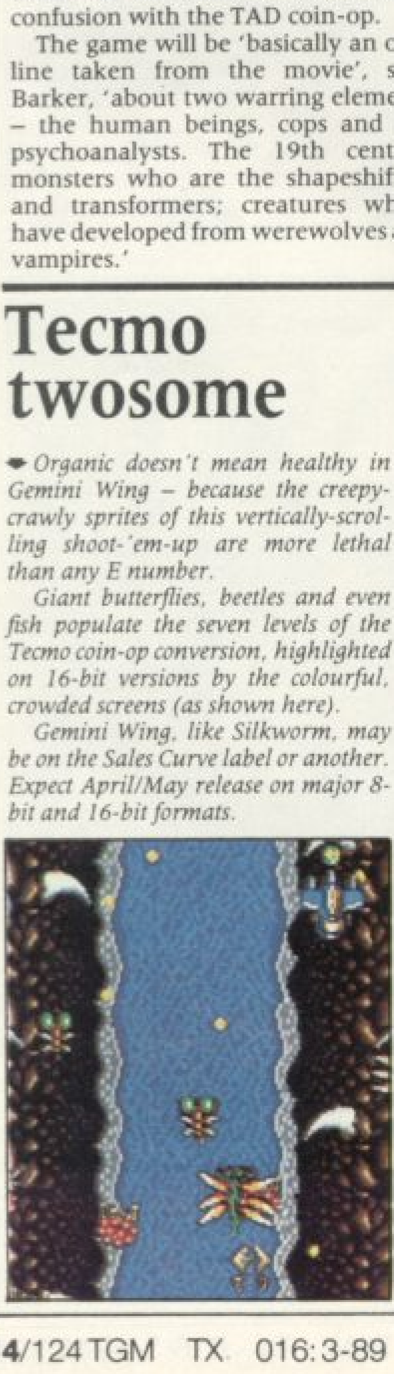
The *Cabal* game designers may find themselves hard pressed to match the book at its shuddering best – but as a major film licence, it will have huge development funds from whichever software house wins the race. Watch this space.

Tecmo twosome

Organic doesn't mean healthy in Gemini Wing – because the creepy-crawly sprites of this vertically-scrolling shoot-'em-up are more lethal than any E number.

Giant butterflies, beetles and even fish populate the seven levels of the Tecmo coin-op conversion, highlighted on 16-bit versions by the colourful, crowded screens (as shown here).

Gemini Wing, like Silkworm, may be on the Sales Curve label or another. Expect April/May release on major 8-bit and 16-bit formats.





Fly cool in Silkworm, an air-and-ground fighting title licensed from the Tecmo coin-op. One player can fly the chopper while another takes a jeep, guaranteeing a constant barrage of screen-ripping explosions on the 16-bit versions we saw.

The first game from new programming team Random Access, Silkworm is set for March or April release by development house The Sales Curve – or they may sell it to another label.

TGM REPORT

EPYX: YET ANOTHER CONSOLE

American software house Epyx has a cheap new console in development – joining the ever-growing band of games machines which includes the Konix Multi-System, finally reviewed in this issue of TGM.

Sources at the California-based company have reported for several months that a large section of Epyx's factory has been closed to all but the most trusted employees.

And David Morse, Chairman of Epyx and one of the Amiga's original hardware designers, was said to be involved in the top-secret project.

Now, stories emerging at January's Consumer Electronics Show in Las Vegas suggest that Epyx are planning a handheld console at about £100. No official announcement has been made yet, and the release date is equally unclear.

Sega snatcher

Meanwhile, we regret we can't bring you the full report on Sega's Megadrive promised this month – our machine was stolen from British Rail!

Another one is due within weeks, so look out for specs and comments soon. And if anyone offers you a cheap Megadrive, you know who to call . . .

Coin-op pops

Both 16-bit Sega Megadrives and 8-bit Nintendo consoles can now be found in Britain's arcades – as the Mega System and Nintendo Play Choice 10.

On both, your cash buys you a set length of time on the machine, during which you can elect to play on any of the built-in games.

On the Nintendo Play Choice 10, these range from the hard'n'fast (there's a version of *Operation Wolf*, using sticks instead of a machine gun) to the more traditional, such as tennis and golf.

The Mega System, meanwhile, features eight games: *Altered Beast*, *Out Run*, *Shinobi*, *Space Harrier 2*, *Super Thunder Blade*, *Great Golf*, *World Soccer* and *Alien Syndrome*.

March debut for MSX2+?

There are now plans to release the MSX2+ (TGM**014**) on European soil – if all goes according to plan, it should be blasting off from the Hannover Computer Show, West Germany, in March.

The 8-bit machine, which comes in three models from Panasonic, Sanyo and Sony, has an advanced specification including a 19,268-colour palette and 512x424 resolution.



In the open after months of secrecy: see Konix Multi-System review, page 16

■ **Great ad, shame about the name:** Promoted lately in glorious black, white and blue in *Mi/PC* is a PC 'like a Savile Row suit or handbuilt motor car . . . a **natural choice** for the discerning'. Its name? The ST series, comprising ST200, ST300, ST400, ST500 and ST700, starting at £573.85.

So if someone tries flogging an ST with a 60Mb hard disk, don't say we didn't warn you . . .

■ **Thalamus hype:** Very little happened at Thalamus last month.

■ **We're quite crazy:** Prices of Japanese daisywheel printers should fall – the EEC has cut import duties to 23.5%, a little over half the previous rate. **Oddly generous** to computer users, this move follows a massive levy imposed on on dot-matrix printers by the EEC mere months ago (TGM**014**).

■ **Sons of SAM:** Miles Gordon Technology are growing more ambitious by the minute. Starting out as a small-scale Spectrum peripheral outfit, they finally launched their Spectrum-compatible micro **SAM** in December (full specs in TGM**014** Back Bytes). Now it seems the SAM Coupe, as it's called, will be followed by an **enhanced model** this autumn and another in 1990.

It's unlikely to be 16-bit, though – MGT say 'upgrading will be a matter of adding components rather than replacing the whole computer'.

A coupla **corrections** to TGM**014**'s report: we got display Mode 3 and Mode 4 the wrong way round, and the sound chip is from Philips not Mullard. It also seems likely that the disk-drive version could cost as much as £229.95, unless the price of components comes down. Expect it in small retailers by May and high-street chains by August.

■ **FAST work:** The Federation Against Software Theft claim to have snatched back about £250,000 worth of **illegally** copied games during 1988. But the majority of the organisation's work still comes from swooping on the lucrative area of business-software piracy, of which about £1 million worth was recovered last year.

■ **Great magazine, shame about the ads:** We (well, two of us) went *Phaze 1* crazy when we saw the new magazine for up-and-coming musicians, produced by the same Cambridgeshire-based firm as *The Guitarist* and *Home & Studio Recording*.

But we bet Microdeal weren't so excited about the placing of their ad for the ST *Super Conductor* MIDI sequencing package. For just three flicks of the page earlier was an ad from Akai, who are pushing dedicated sequencer hardware . . . and mocking the **clutter** that computer music causes.

'No bulky monitor, no separate keyboard or disk drives, no interface boxes or electronic rodents and no tangled mass of interconnecting cables,' Akai say . . . and illustrate it all with a pic of the ST.

Ah well, all's fair in piracy and advertising.

■ **Indecent:** The Advertising Standards Authority (ASA) have cracked down on sexist software ads – with US Gold's *Psycho Pigs UXB* being, predictably, among those cited. The ad, which featured two sprogs gazing adoringly at a barely-dressed woman and comparing her to the game, sparked off controversy in readers' letters at the time.

Also slammed were network firm Sagesoft, who ran an ad for their *MainLan* product which showed a woman and the phrase 'If she understands this headline, she'll understand our new network'. **Stupid** or what?

Nonsexual offenders in recent ASA reports include Commodore, who claimed that a £399 Amiga could do things it couldn't (like **talk sensibly**?), Datel Electronics for an incorrect price, and On-line Software – for claiming, rather morbidly, that their software would work even after the purchaser died.

■ **No sexism please:** Concerned micro folk who believe that 'software is becoming an area of exclusively **male participation**' can now share their fears – with members of the Organisation Against Sexism In Software (OASIS).

OASIS hope to redress the balance with a magazine (every two months) and 'campaigns', as yet undefined. They may have a **hard time** getting 'antisexist software' on the shelves, though – many companies, such as Code Masters and Audiogenic, have spoken about the problem, without much visible result.

OASIS: Sandra Vogel, *3 Alden Court, Stanley Road, Wimbledon, London SW19 8RD.*

■ **Now you FSCM, now you don't:** The Federation Of Small Computer Magazines (FSCM) has a new head – Jonathan Morris, editor of *Computer LYNX*. Assisting small computer magazines (better known as **fanzines**) with distribution, advertising, obtaining review copies, and stands at shows, the FSCM can be contacted c/o JOnathan Morris at *187 Perrysfield Road, Cheshunt, Hertfordshire EN8 0TL.*

DATELINE

February 21-24, **Which Computer? Show**, NEC, Birmingham

March 7-April 2, **Ideal Home Exhibition**, Earls Court, London

March 31-April 2, **Amstrad Computer Show**, Alexandra Palace

THE POWER GENERATION

And now for something completely different – a console which makes the leap from little black box to living-room arcade machine. Konix's Multi-System will be in the high streets this autumn at £149, and TGM was one of the first to see it.

Imagine a cube: a simple wireframe shape on a screen. Now imagine that on one side a character begins to move: a coloured sprite, walking across the surface of the cube. Now imagine that you raise the focus of your eyes a little higher and notice that on the next side of the cube another sprite is moving.

Slowly, the cube begins to rotate: then faster: and you notice that every side shows a different graphic, some moving, some static. As the cube speeds up, the sensation is like clicking through TV channels at mind-blasting velocity – one image appears, now another, now another, and though it's moving too fast now to make out clearly what's happening, as the cube approaches strobe speed you can register that you're seeing something never before seen this side of a five-figure graphics workstation.

The computer is coming close to real 3-D – handling screen objects as detailed as real-life objects. Only it isn't a computer, not in the keyboard-and-operating-system sense; this is the Konix Multi-System, which will be the first 16-bit console to appear in British shops when it's released this autumn. It is also much more than a console, as the name suggests.

Weird dream

To say the Multi-System looks strange is an understatement, as the pictures on these pages show. And it was the physical appearance of the Multi-System, before even the astounding speed of its graphics-handling, that reduced Fleet Street's hardened representative to dumbstruck amazement when TGM, along with The Guardian and Computer Trade Weekly, was given a sneak preview last month.

Looking like a toilet seat with handlebars, the £199 Multi-System – which was previously codenamed the Slipstream and first revealed in TGM**012** – will stand out on the shelves and in the home. That's part of Konix's intention: as the company's founder-boss Wyn Holloway observes, 'we're basing our hopes on the visual rather than the electronic'.

But he goes on to make it clear that 'the visual' is much more than the unusual blue-and-steel colouring or the shape. 'It is not just a square box. It allows the user to be involved in the game, hands-on, with a lot of feedback.'

And for once, the term 'hands-on' is no simple cliché. Probably the cleverest and most attractive feature of the Multi-System, graphics-handling apart (and we're only sorry our screenshots can't show how fast they zip past), is the way it can be adapted and expanded to suit the kind of games you want to use.

First things first, however. Come this autumn, £199 (including VAT) will buy you a Multi-System with a joystick, two games, a 1Mb disk drive and a 12-month guarantee – all you need to set up and go. Further games will cost £14.99 each.

But you'll then be able to buy add-ons ranging from a light gun with recoil to a bike (whose pedals tighten as the game takes you 'uphill', natch) to a chair. The *Afterburner*-style chair, which has been the most remarked-upon (and indeed doubted) of the Multi-System products, is designed to take both the console itself and a TV. It thus becomes the closest thing yet to 'an arcade cabinet in your house', as the system was first described to TGM back in September.

INSIDE THE DREAM MACHINE

Graphic genius and the disk-drive trick

The Konix Multi-System may be the first 16-bit console to cross the barrier from 'coming soon' to 'here now', but ironically its 16-bit processor is one of the less dazzling components.

And this processor, an Intel 8086 chip running at a zippy 12MHz, may also be one of the bigger hurdles for Multi-System programmers to jump. Because the 8086 is used mainly in PCs, it's not nearly as familiar to games-writers as the Motorola 68000 found in the ST and Amiga, or the Zilog Z80 of the Spectrum.

However, the 8086 will do little of the processing that really makes a game – it's simply parceling out work to other chips. At the heart of the machine are two specialist chips, one for graphics and one for sound; and it's in these that the wonders are worked.

Chips for everything

These ASICs (application-specific integrated circuits) were designed specially for





■ THE JAPANESE CONTENDER

The land of the rising sun also rises where consoles are concerned – and next month TGM brings Britain's first full reviews of the PC Engine and its leading games.

The tiny £199.95 console from NEC, which is currently only available on mail-order here, draws astounding sound and graphics from the 2Mb capacity of its ROM cartridges. And with the added power of a CD-ROM drive it looks set to be the Multi-System's punchiest opponent.

TGM017 is on sale March 23.

FLARE ■ *WERE* THERE

'The Flare team *are* brilliant designers,' says Konix boss Wyn Holloway – so it's no wonder that he called them in to work on the Multi-System.

Ever since news of the Konix project leaked out last autumn, there's been speculation as to Flare's involvement. Cambridge-based Flare Technology had already developed a console, the Flare One (TGM**010**), which hasn't seen the light of day yet.

Its specs were great, but it had a few antiquated features, like an 8-bit Z80 processor and, horror of horrors, tape loading!

Holloway stresses that the Multi-System is not the Flare One, but admits that the Flare team were involved: 'We had only been working on ours a year when Flare had been working on theirs three years. Their knowledge is what I wanted.'

And the Multi-System goes far ahead of even the Flare One on graphics, with a blitter chip three times as fast.

the Multi-System, so they give the console capabilities that can't be found elsewhere – yet.

The graphics chip can produce 9 million pixels per second (in other words, theoretically it can change the screen 87 times per second at high resolution).

It can draw rectangles, lines and 3-D vector graphics itself, making life easier for the programmer – rather than having to tell the machine how to produce a shape in painstaking detail, he can simply define it in terms of basic shapes and leave the rest to the ASIC.

The entire palette of 4,096 colours can be used onscreen at the same time. And though there are – as with all systems – some restrictions on what colours can be used next to each other, the palette of colours in use can be different for every line of pixels, giving at least the illusion of unrestricted colouring.

Several resolutions are possible, up to 512x200, and different resolutions can be used on different parts of the screen.

Output is via composite video and RGB, so the Multi-System can be used with an RGB monitor as well as a TV.

Ear experience

Sound is as important as vision, as anyone who's visited the arcades (or the PC Engine!) recently will realise.

The Multi-System's stereo sound is described by Konix as 'CD-quality', and they compare the sound chip itself to the Yamaha DX7 synthesizer. It can be played through headphones or a hi-fi system.

PRESS ANY KEY

Though the number of channels wasn't settled when we went to press, Konix engineers have managed to get 25 channels out of the machine – more than even the Acorn Archimedes, currently the leader on channel count with 16, can offer.

Wot no memory?

And here's the big surprise after all those top-of-the-range specs. The Multi-System has a RAM (working memory) of only 128K, no more than the Spectrum!

Considering that storing the pixel information for just one high-resolution Multi-System screen can take as much as 50K, this would seem to put paid to the machine's much-touted power. But here another Konix innovation – not quite an invention – comes in.

The Multi-System has a 3.5-inch (ST/Amiga-style) drive which can read disks holding up to 1Mb of information. A separate ASIC controls the disk drive, so it can effectively operate on its own while a program is running, without slowing things down.

There can be almost continual disk access, giving the machine 1Mb to play with in practice, though at any given time it will only hold the 128K currently being used.

All programmers need to do is learn how to arrange their code so that the drive head doesn't have to travel over the disk too far, searching for the next bit of program.

Keeping it cheap

That 128K RAM is still well above the competitors' – Sega's 16-bit Megadrive, for instance, has only 64K. And Konix will provide an optional upgrade to 1.5Mb, which is designed so you can install it yourself by inserting a new card into the disk drive unit. No muss, no fuss.

A 512K model was considered, but Konix's Wyn Holloway argues that it would have pushed the price of the basic Multi-System to £399, far too high for a console.

The small memory/continual disk access solution may be a compromise, but it has its advantages . . .

Memory chips are still expensive; minimising their use, this system keeps the hardware price down.

ROM cartridges, as used on most consoles, provide the best way of keeping RAM costs low while allowing unlimited access to the program. However, they themselves are expensive, as they have to be manufactured specially – witness the £30 price tag of Nintendo games.

The 3.5-inch disk, by contrast, is so common that it's almost cheap; software houses buying in bulk pay as little as 80p per disk. Konix will need some modifications made to their disks to prevent piracy and unauthorised software (see box headed Hands Off!), but even these will mean only a few changes to a production-line process.

So, though the disk-drive ASIC obviously adds to the Multi-System's price and the arrangement of code on the disk may cause programmers some headaches at first, for once a compromise seems to be the best and cheapest solution.



Sitting pretty: this picture from a Multi-System demo shows the £129 chair, which Konix describe as 'the key peripheral – it allows you every movement of a plane'.

Responding to 'movements' of the joystick, steering wheel or whatever, the chair can move up to 10° in any direction (including up and down) or twist. The original design was for a 15° maximum tilt, but the engineers found themselves staggering out airsick!

The console itself and a TV (up to 14 inches) clip into the chair and plug into sockets on the chair, so there's only a single power lead to the wall.

Add-on packs for the chair, such as speakers behind the head, are under consideration – and the firm promise they'll 'convert that chair to something out of Star Wars*'. The chair may also be sold with the console itself for some £300.*

PROFILE

Wyn Holloway



'He is good at thinking in shapes – very much a shape person rather than a word person.' Considering what one longtime acquaintance says of Wyn Holloway, it might seem that he was made for the Multi-System, which has more shape than a dairy fridge. But the 39-year-old Konix founder first made his mark in the micro world with a shape of a quite different kind – the Speedking joystick.

Holloway, a carpenter by trade, was working in a computer shop in Cardiff's central Clifton Street when he noticed the number of glum faces arriving with broken joysticks – broken from *Daley Thompson's Decathlon*, the Ocean sports classic.

His craftsman mind began to grind away at the problem, and he soon realised that most users *hold* the joystick in their hands: they have no use for the suction cups beloved of early joystick manufacturers. The result was the Speedking joystick, built to be handheld, with more than three million sales now notched up.

Today, the shapes person is necessarily a words person too, spending more time on management than getting to grips with the screwdriver. Holloway drives an F-reg jag, wears a modest pinstripe and drinks his office coffee from china cups and saucers, a far cry from the dozens of workers assembling Speedkings in the 40,000-square-foot factory which his offices overlook.

But he remains closely involved with his products, handling much of the basic design himself; his secretary files all the blotting paper from his spacious desk, on which the first doodles of a new joystick or console may be made.

And Holloway was determined that when the time came to drive down from Konix's spanking new factory near Ebbw Vale in his native south Wales, through the tree-lined hills that just a few years ago were grey slag heaps, and into London for the Multi-System's launch at the end of January . . . he would finally enjoy playing it. 'After two years and all this aggravation, I want to be first in the chair. To me personally, it's everything.'

'It's designed for games – we didn't try to design a computer'.

KONEXT?

After the Multi-System, Konix plan a new kind of electronic experience – the Total Home Control System. Boasting 'four or five things in one unit for what they'd pay for one of them,' according to the firm's Wyn Holloway, this will be a step in the direction of computer-controlled homes (TGM**007**).

And of course, like the Multi-System, it's going to look different from the average total home control system. It likely won't be released under the name Konix, however.

HANDS OFF!

Are pirates sunk?

By opting for a cheap 3.5-inch disk, Konix laid themselves open to the piracy problem – because blank disks are available off the shelf.

But with a few modifications, they've managed to make the disks both cheap (allowing cheap software) and uncopyable. Each Konix 3.5-inch disk differs from the normal kind in three ways, which of course they're not revealing – in fact, only three people in Konix itself know what's been done.

The changes are chemical as well as electronic and mechanical, so it will be impossible for pirates to reproduce custom Konix disks without expensive equipment.

And the disk drive will also slightly different from the norm, to read these disks.

Says Konix's Wyn Holloway: 'We're not saying it's going to be 100% copyproof, but what it will eliminate is schoolyard copying, which is 90% of the problem.'

The disk alterations will also stop software houses from producing Multi-System games without Konix permission – just as Nintendo use all the legal weapons at their disposal to prevent unauthorised Nintendo games.

It's particularly important to Konix that they're involved in all software releases, because much of their profit will come from a cut of the software houses' income.

OUT OF THE BLUE

How – and why – they did it

In a Las Vegas hotel room early this year, Wyn Holloway finally fell asleep amid the crowds of console-watchers. After 28 months of development, Mr Konix's Multi-System was at last on the launch pad; the design was all but complete, software houses were signed up, and magazines would soon be splashing the curious-looking blue beast over their front pages.

But as the brightest and best of America's programmers filled his room at the Consumer Electronics Show and pored over what one described as 'genuinely advancing video-game performance standards', Holloway perhaps recalled that the idea had originally come not from these masters of machine code, from multinational software producers or from the technophiliacs of the computer press, but from users.

Readers, in fact. For in the autumn of 1986, Holloway had been sitting, 'bored out of my mind', leafing through the letters columns of the computer magazines which strew his office.

He remembers: 'It just sort of jumped out of the page.' All the letter-writers were hinting, consciously or not, at their desire for a better machine, a machine for games.

The Multi-System was born then, on one of the blotting pads where Holloway sketches his ideas before they're dated and filed by a careful secretary.

Later, software developers were asked what their ideal machine would be like, and 'we've taken a lot of their ideas and a lot of their criticism'.

There were certainly tweaks to the electronics along the way, and several different processors were contemplated before the Intel 8086 was chosen.

But it hasn't changed much since design began in earnest some 18 months ago – 'the original idea and the original design are the best', Holloway says.

SALES PITCH

The image matters

When Konix start a £2 million TV ad campaign for the console this September, they'll need to get everything right to achieve the 100,000 sales that they expect in the first year.

A number of names were considered before Multi-System, which Konix reckon sums up the machine's multifaceted potential.

The codename Slipstream was rejected, says Holloway, because 'what is a Slipstream? You need a name that the user, when he reads it, gets an image in his mind.'

Arcade System was another possibility, but was also dropped because of the grimy drugs'n'wasted cash connotations that arcades have in some moralists' minds.

And the selling line 'A Real Experience' was dropped – because someone noticed that on packaging it looks like 'Real Expensive'! Instead, the choice is 'Experience The Reality'.

READY FOR TAKEOFF?

Real-life pilots could be taking a Multi-System home soon – and not to play games on. For Konix are hoping to set up a deal with producers of professional flight-training simulators, and give amateur pilots the chance to learn the basics on a Multi-System with chair and realistic controls.

It wouldn't take many modifications to turn the Multi-System into a passable cockpit, and the setup would be far cheaper than a specially-built simulator.

Amateur flying clubs with planes like Cherokees and Pipers are likely to be approached first.



Driving force: with its full fleet of peripherals, the Multi-System will be most suitable for vehicle simulations. This demo was written to show off the speed of its graphics-handling, including parallax scrolling in the background and rapidly-changing graphic detail.

THE SOFTWARE

All this and flight sims too

'It's designed for games – we didn't try to design a computer.' Konix boss Wyn Holloway sees the Multi-System's greatest potential in its ability to change control methods via peripherals and, of course, in its arcade-quality sound and graphics.

So it should be no surprise if flight and vehicle simulations play a large part in the Multi-System's software, which will be released on 3.5-inch disks. But even among the 15 titles which Holloway promises will be available as soon as the machine is, there'll also be original arcade titles and conversions of the most successful micro games – Top Ten only, of course.

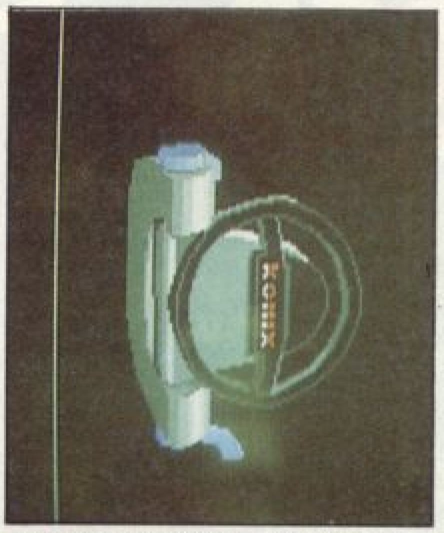
It's not yet clear, however, how many games will depend on the peripherals for full enjoyment. Financially, Konix expect to make more profit out of the peripherals and software than from the basic system itself, so it seems likely that at least some games will require the full set-up of chair, 3-D visor and what have you.

The price is low

As for price, at £14.99 each the Multi-System games will already be cheaper than most 16-bit titles. What's more, Konix themselves will provide at least two games per year at less than half price.

A total of 40 games is promised by Christmas, and 100 altogether by next spring. About 20 software houses have been signed up, and though the only ones Holloway will admit to are Ocean and US Gold, there is also believed to be interest from American firms such as Lucasfilm, MicroProse and Mindscape, and from Rainbow Arts in West Germany.

As Holloway says, 'programmers, as soon as they've seen the machine, have commented they can now do a game they've only dreamed of'. And software developers who've seen the Multi-System echo him.





Self-portraits: though pictures of the Multi-System's peripherals aren't available yet, one demo showed them on the machine's screen – first rotating in wireframe at astounding speeds, and then filling in as shown here.

The steering wheel (left) has a built-in solenoid to give 'tactile feedback' – ie it gives realistic resistance on sharp or difficult turns.

The handlebars (right) can be used either for flight control or motorcycle riding – after you've selected the mode, the Multi-System's pedals change their function to match the vehicle.

Both are included in the basic £149 system.

CONSOLE CHOICE

The odds-on favourites

In a world where the marketplace rules, there are too many consoles around – and some are bound to be knocked out in the fierce fight for sales.

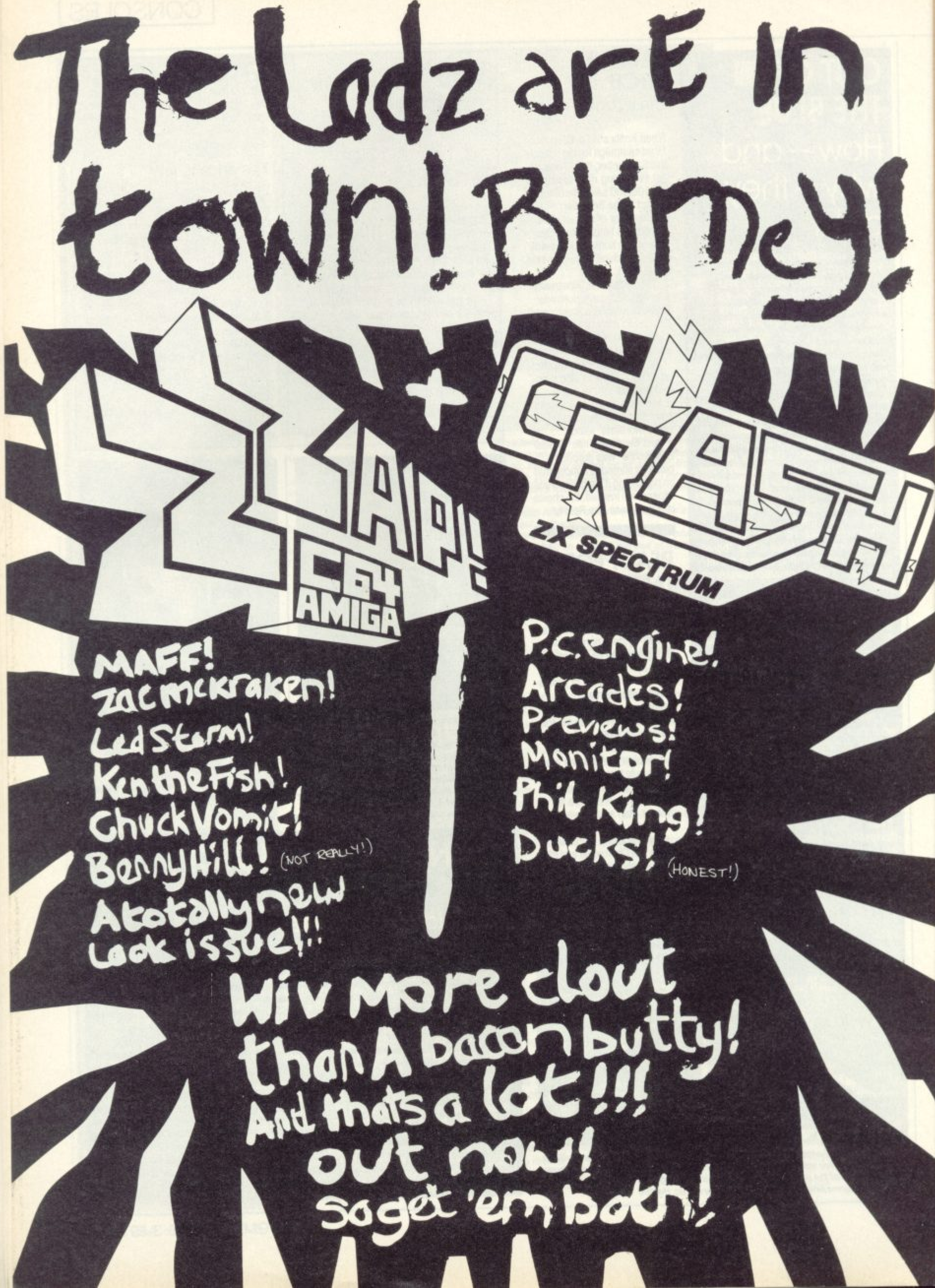
Arrayed against the Multi-System already are the 8-bit Atari VCS2600, Nintendo and Sega, with the PC Engine also set for a big sales push this year. So far, the Sega and the ten-year-old Atari have been the most successful – and in late 1989, Sega's 16-bit Megadrive will also appear.

'The Sega 16-bit is a brilliant machine,' concedes Konix's Wyn Holloway, 'but it is a box.' There are things to be learned, though: 'You gotta look at their products, strip them down, see what they do and do it better.'

Writing the others off as uninspired designs despite their electronic whizzery, he sees the biggest threat coming from something we may not even have heard of yet: 'A small design house is going to come out with something far superior [to the Multi-System].'

Perhaps – but as the experience of countless computers from the MSX to the QL to the Archimedes has shown, what counts is marketing as much as machinery.

So while we consider the Multi-System and the PC Engine as the strongest contenders on specification – and the Multi-System will have more and bigger advertising – the scene a year hence is anybody's guess. As Holloway observes, 'the Sega is a far better machine than the Nintendo; but [in other countries[the Nintendo succeeded'.


The Ladz arE in town! Blimey!
ZAP! C64 AMIGA
+
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HAVE A BLASTING GOOD TIME WITH IMAGEWORKS AND BLASTEROIDS

●NAME those games . . .

●WIN a Blasteroids coin-op!

What's rough, tough and coming straight from the coin-ops to your computer? The answer: *Blasteroids*, the Atari coin-op conversion from **Imageworks**. Teque, the development team producing space shoot-'em-up *Blasteroids*, have taken graphics directly from the arcade machine's program cards to the ST and Amiga, reproducing the ships, asteroids and spacescapes of the original.

And so you can just see how well the game matches up to its original, Imageworks are offering a **Blasteroids coin-op machine** to the winner of this comp (which is run jointly with ZZAP!, our sister C64/Amiga magazine).

There'll be **15 runners-up** from TGM, too – and the first five win Imageworks goodie bags, so if you missed our TGM**013** Imageworks/*Bombuzal* comp, here's your chance.

The next five win Imageworks T-shirts and watches, as worn in the TGM office, and the next five get Imageworks T-shirts.

Just answer the questions on a postcard or the back of a sealed envelope, add your name and address, and bang the whole lot off to: **A REAL BLAST WITH IMAGEWORKS COMP, TGM,** *PO Box 10, Ludlow, Shropshire SY8 1DB*, to arrive by **March 23**.

Usual rules as printed on the contents page apply. The first prize will go to one winner chosen from all entries to the TGM and ZZAP! competitions.

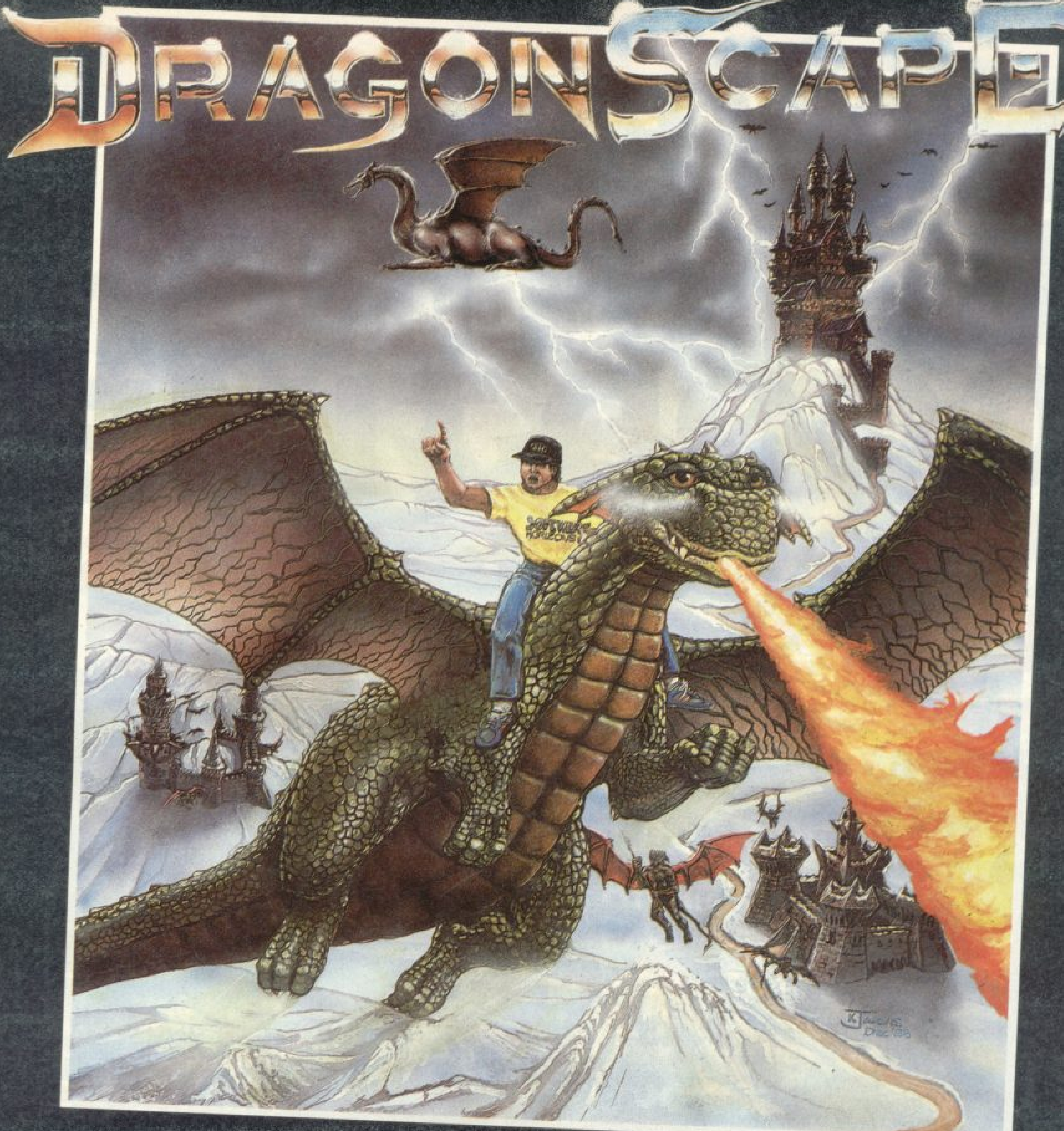


Straight from the coin-op: Blasteroids *from Imageworks. Expect Amiga, PC, ST, CPC, C64, Spectrum and MSX release in March.*

NAME THOSE GAMES

The questions

- **1 Which Imageworks puzzle game features levels from programmers such as Andrew Braybrook, Jeff 'Llamasoft' Minter and Jon Ritman?**
- **2 Which Imageworks game was set in the mythical dictatorship of El Diablo?**
- **3 Which Imageworks game, programmed by Denton Designs, turned fox-hunting on its head?**
- **4 Which large software producer owns Imageworks?**
- **5 On which classic 1979 Atari coin-op is Blasteroids based?**



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TALKIN' ABOUT A REVOLUTION

Cash is dead – long live the **smart card**! Micro genius can now put a computer in your wallet, and the revolution which began in France is about to hit Britain.

Mel Croucher gives a personal view of the pocket-sized future, while Richard Henderson describes the technology.

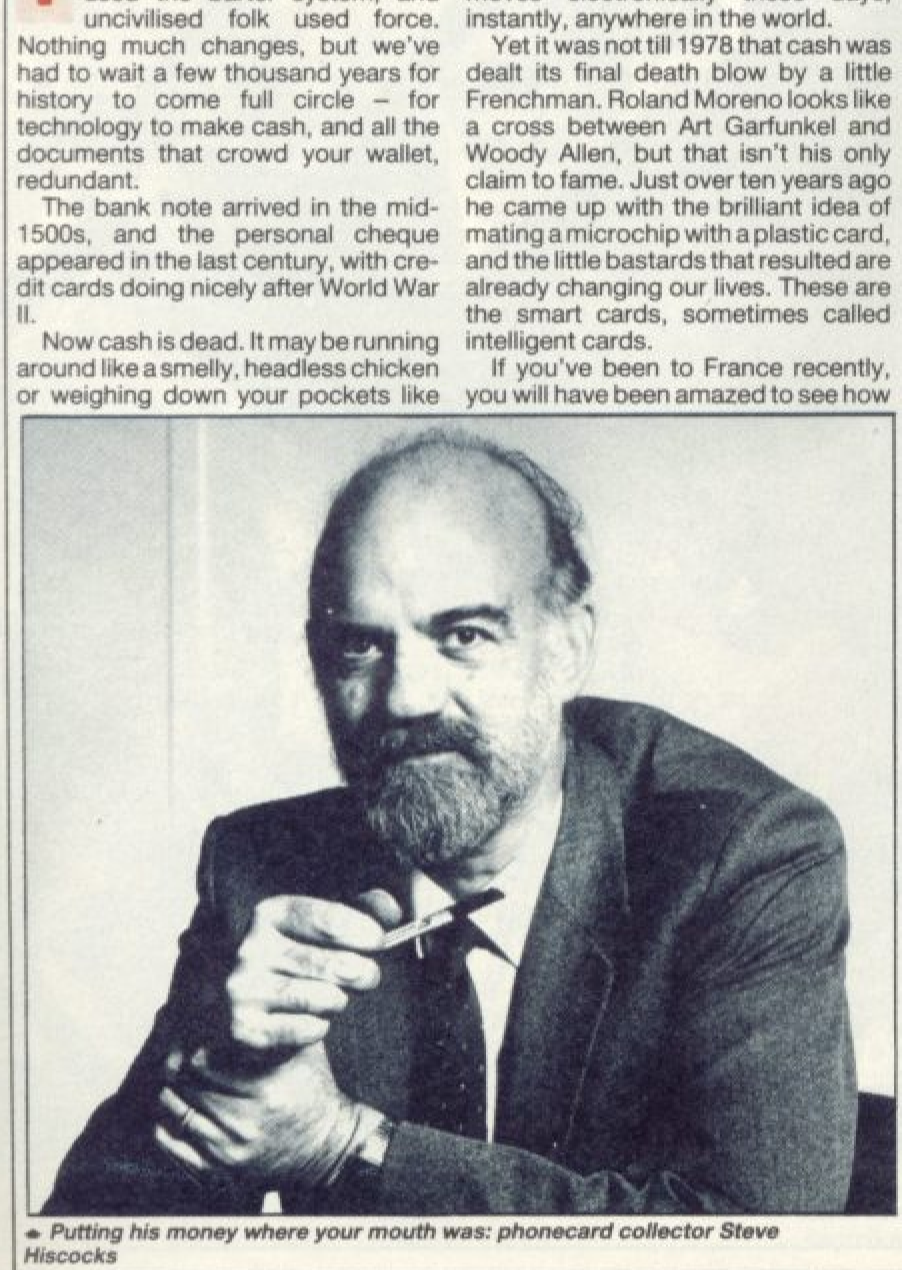
In the beginning, human beings had no need for anything as daft as money. Civilised people used the barter system, and uncivilised folk used force. Nothing much changes, but we've had to wait a few thousand years for history to come full circle – for technology to make cash, and all the documents that crowd your wallet, redundant.

The bank note arrived in the mid-1500s, and the personal cheque appeared in the last century, with credit cards doing nicely after World War II.

Now cash is dead. It may be running around like a smelly, headless chicken or weighing down your pockets like the lumps of amber and bags of salt that prehistoric tribes used for money, but it's dead all right – because money moves electronically these days, instantly, anywhere in the world.

Yet it was not till 1978 that cash was dealt its final death blow by a little Frenchman. Roland Moreno looks like a cross between Art Garfunkel and Woody Allen, but that isn't his only claim to fame. Just over ten years ago he came up with the brilliant idea of mating a microchip with a plastic card, and the little bastards that resulted are already changing our lives. These are the smart cards, sometimes called intelligent cards.

If you've been to France recently, you will have been amazed to see how much Roland Moreno's invention has changed the whole concept of 'money'. Yet ten years back only two outfits showed any interest in his ideas, a couple of French companies named Bull and Schlumberger. When they realised the implications of the invention they touted it around, and in 1983 France-Télécom placed its first order for smart cards.



Putting his money where your mouth was: phonecard collector Steve Hiscocks

Within a few months, the world's first fully robotic factory was set up, operating 24 hours a day, 365 days a year, and by 1988 over 40 million French phonecards had been sold.

But that's nothing compared to what is happening now. Invisible currency is sweeping across France in the shape of smart cards for petrol stations, hotels, cinemas, libraries, hypermarkets, and even parking meters – and the master plan is for each citizen to have one card that will cover the lot.

Norway has already opted for the system, and Spain, Holland, West Germany, Australia and Japan are testing it out.

So those phonecards need not simply act as a pile of loose change, but could also keep a record of every number dialled and the time, date and duration of your call, as well as check your phone bill (and act as a witness in the divorce court after it's proved that you phoned your lover form the motel room).

And this is where I do my predictable technophobe bit, because smart cards are going to take over much sooner than later, and we must use them before they use us.

Credit risks

My holographic colleague Stuart 'Crackers' Wynne will be able to give you a complete list of all the science-fiction books that feature human beings reduced to nothing more than their credit ratings, in the 'you are what you're worth' mould.

My favourite is the one where everybody is fitted with an electronic collar around the neck, which shines ebony black all the time you are in credit, turns red when you get into debt, and throttles you if the credit computers reckon you can never repay your cre-

PC Engineering

NEC's fabulously sexy PC Engine uses credit-card-sized ROM cartridges.

These aren't really smart cards as such, as there's no way for the user to change the data on the card, and there's no onboard processing power – just lots and lots of memory.

But they're a good example of just how much data could be crushed into a smart card.

Play your cards right

Mel Croucher meets a collector with ringing in his ears

150 years ago, a bright spark named Sir Roland Hill came up with the idea of the postage stamp. A tiny handful of people began collecting these mass-produced bits of paper, while the rest of the world simply used them and then chucked them away.

Today stamps are a better investment than many, and the rarest are worth hundreds of times their own weight in gold! So imagine if you had been around back in the 1840s, when postage stamps were just beginning to spread all over the world, and you knew then what you know now . . .

Imagine? You don't have to! Exactly the same thing is happening with computerised phonecards, and some of them are already valuable!

There is one man in Britain who is the acknowledged expert in collecting phone cards – Dr Steve Hiscocks, a civil servant, working for the Department of Energy's non-nuclear Research Department when he's not collecting little squares of coloured plastic.

Mel Some people would regard collectors of phonecards as somewhat eccentric. How did you get into this?
Steve I am one of a blessed breed, a born collector, and I spend a lot of my time in Paris.
Mel And Paris is the centre for phonecard collectors?
Steve There are already very active collectors' clubs setting up, and it is quite big business with professional dealers operating there.
Mel How big?
Steve £200 and £300 deals.
Mel For a collection of phonecards?

PRESS ANY KEY

ditors.

As I write this piece, the average household in the UK is in hock to the tune of £1,500 excluding mortgage repayments, and 90% of all salaried employees are logged in to more than 20 private databases that swap personal information concerning their credit risks, buying habits, debts and investments.

Those science-fiction stories suddenly look very old-fashioned indeed. Computers already know what nine out of ten of the working population in this country are 'worth'!

The new Europassports will change into identity smart cards before the end of the next decade; in fact, I predict that they will not only hold a record of your travelling habits, but will also act as your driving licence, your medical file and your police record. And they'll probably keep one hell of a lot more personal data that is currently retained by the Social Security vampires, educational authorities, clap clinic, electoral roll, you name it.

Naturally, the Powers That Be will deny that most of this information is held on your identity smart card, and they will be quite right. But as soon as your card is scanned by a portable reader, which is linked to the Central Scrutiniser mainframe, all of your intimate details could be called up at the touch of a button, anywhere in the world.

Brave new world?

I don't want to play down the incredible advantages that the smart card is about to hand us. We will be able to check the state of our bank balance from a restaurant, instead of wandering around a windswept shopping precinct looking for a cash dispenser that works.

When we get knocked down by a double-decker bus, the paramedics will be able to whip out our smart cards (before whipping out our kidneys) and discover our blood group, what drugs we're on, if we are carrying HIV antibodies (the AIDS test) and if we can afford to pay for the privatised ambulance fare.

We will be able to travel though dangerous places like Marseilles, Beirut and Ludlow, carrying a fortune in smart-card credit – and not give a toss when we get robbed, because the thief won't know our personal identification number. We'd just pop along to the nearest smart-card centre, key in our ID number, give a thumb print, voiceprint and retina print, and bingo! Our new card pops out of the slot.

Steve For a single card.
Mel Are you kidding?
Steve Like all such things, it depends on rarity. For example, Plessey issued only 100 of their standard service cards overprinted for China in 1988. They are probably the rarest cards in the world, worth around the £600 mark. But I know of individual cards selling for over £1,000 in Japan, and the Japanese telephone company tells me that they estimate 30% of all the cards they sell are disappearing into private collections, and are never used!
Mel And the rarest British phonecard?
Steve Hmm, the Muirfields Open Golf Championship commemorative 100-unit card, about £70 in mint condition.
Mel Have you got one?



◆ *Small but perfectly-formed: French smart-card inventor Roland Moreno*

Of course, there's a problem for the homeless, the unemployed, the mentally handicapped, the criminal on the run, and anyone who deliberately chooses to opt out of the smart-card future – computerised economic control is going to force them into a subclass of citizen.

But after all, this subclass already exists in everything but name. For all the rest, the smart card's cash-free society will seem like a natural progression from today's credit culture; the only people who lose will be handbag manufacturers.

Nobody will have to cart around a sackful of junk consisting of coins, bank notes, credit cards, driving licences, passports, insurance covers, visiting cards, address books, lottery tickets, cheque books, timetables, phone numbers, season tickets, blood donor cards, traveller's cheques, luncheon vouchers, library cards, doctor's prescriptions, parking



Steve Well, naturally . . . though I don't know anyone else who has, they all seem to have disappeared temporarily. My collection of UK cards is almost complete, only two to go, and I've probably got the biggest collection of overseas cards in this country.

Mel So it's in your interests to hype up the value of cards?

Steve Not a bit of it, a true collector is much more interested in shaping their collection, making contacts, swapping items and exchanging information. Value is secondary.

Mel But as with stamps, value will depend on whether a phonecard is in mint condition, or used.

Steve Smart cards of the type used in France, Japan, Italy and Egypt show no visible change when they have been used. Certain magnetic cards are punched or indented, and for most countries a white band over an optical strip marks the number of units used, with a black mark clearly showing the end of each call. I have compiled the first catalogue of phonecards which sets out the value of each issue.

Mel When did things start to get interesting in the UK?

Steve Christmas 1986. That was when we saw the first advertising card over here. This was followed by commemoratives, things like the Valentine Card, and well over 40 advertising cards as well as a score of 'art' cards.

Mel So how do you set about collecting the damn things?

Steve Buy them! On the other hand you can appeal to friends in other countries, exchange them with collectors, and easiest of all, pick them up for nothing! Most users leave expired cards on top of the telephone when they have used up all the units. And if you can afford it, you can even buy the appropriate tube of Mentadent, packet of Persil, can of Australian lager, or bottle of Scotch!

Mel Very many thanks, Dr Hiscocks. I'm afraid I'll have to end the interview there.

Steve Why?

Mel My phonecard's run out. Bye-ee!

■ CONTACTS

■ Collector's information exchange: Andrew Hall, Telegraph & Telephone Study Circle, *PO Box 62, York YO1 1YL.*

■ *The Collector's Book of Telephone Cards* is available on mail order from Dr Steve Hiscocks, *PO Box 77, Woking, Surrey GU22 0HB.* Price £4.30 (UK) or £4.50 (rest of Europe), including postage.

Hiscocks is also producing a collector's newsletter update every quarter.

tokens and last wills.

So if it's already happened in France, when will the revolution reach the UK? The EEC has defined electronic money as follows: 'The combination of computer, magnetic, electronic and information technology to enable funds to be transferred without the exchange of coin or documents, involving a three-way relationship between banks, merchants and consumers'.

Cash and credit barriers will be dismantled in Europe on January 1 1992. As a well-known singer once wailed: 'People get ready!'

Mel Croucher

How would you like to open locked doors using a credit card? No, this isn't *The TGM Guide to Housebreaking for Fun & Profit*, we are talking smart cards – probably the most useful things since Sony invented the Walkman.

The smart card is the same size as a normal credit or cashpoint card, and indeed could easily be mistaken for one of its humbler cousins. Look within a smart card, however (here, borrow my X-ray specs), and embedded in the plastic you'll find a processor chip and up to 1Mb of RAM (phonecards store only 256 bits of information).

This is what gives a smart card its 'smartness' and sets it apart from its brainless relatives. It's like a plastic card with A levels.

Most smart cards have exposed electrical connectors that allow them to be interfaced to another device, such as an EFTPOS (Electronic Funds Transfer At Point Of Sale) terminal or a phonecard payphone, but their future applications can go further than that.

Because the smart card has onboard processing power, it could easily incorporate a tiny keyboard and LCD screen (well, it'd be easy if you were an electronics whiz with an immense budget) and be made into a personal database, electronic notebook or other gadget.

As data storage devices, smart cards could be a worthy alternative to disks. They're a lot smaller, and the data stored on them is less likely to be damaged, because the embedded memory chips are better protected than the exposed magnetic surface of disks.

Sir Clive Sinclair's ill-fated Pandora machine was to have used smart cards as storage media, but by the time the Pandora evolved into the Z88 portable, Sir Clive's worries about exposed electrical connectors on the cards had killed the idea.

Several pilot schemes exist around the world, testing smart-card technology in different applications. Currently, the most popular use for smart cards is in the world of finance, and many banks are conducting small-scale trials right now.

So, in the not-too-distant future, the card you get from your bank will have all your financial records stored on it. When you buy something using the card, your balance is simply recalculated and the card updated. When a payment is made to your account, the card can be 'loaded' with the extra cash. Rubber cheques may become a thing of the past!

All bank-account holders in France will be issued with a smart card by 1990, and a Luxembourg bank is about to replace its 40,000 magnetic-strip cards with smart Visa cards.

Peanuts and TV

Other schemes in operation, or being tested, range from health care – patients' medical records and prescription details can be stored on smart cards – to agriculture: sales of peanuts in the southern states of the USA are controlled and monitored with smart cards.

It seems likely that Rupert Murdoch's Sky Television will use smart cards to extract payment from viewers of its two subscription-based satellite channels, Sky Movies and The Disney Channel.

The signals will be scrambled, so a decoder will be needed to unscramble them. The information needed to decipher the picture will be held on a smart card, which is inserted into the decoder unit to give a perfect picture. Don't think you'll get away with buying just one decoder card, though: it costs £12 a month to view Sky's pay channels, and they'll be changing the method of encoding the signal each month, so you'll have to keep forking out the readies for new cards 12 times a year (total cost £144 . . .).

In Japan, you can buy smart-card sound samplers. Essentially miniature digital recorders, they can be used to record spoken messages which can then be played back at will.

Smart cards could also be used to replace keys – already, many hotels and large organisations use encoded magnetic cards to open locks, because they're tough to forge. The security applications are endless; maybe the card of 2001 wouldn't let you into the hotel room if you hadn't paid the minibar bill.

Getting cheaper

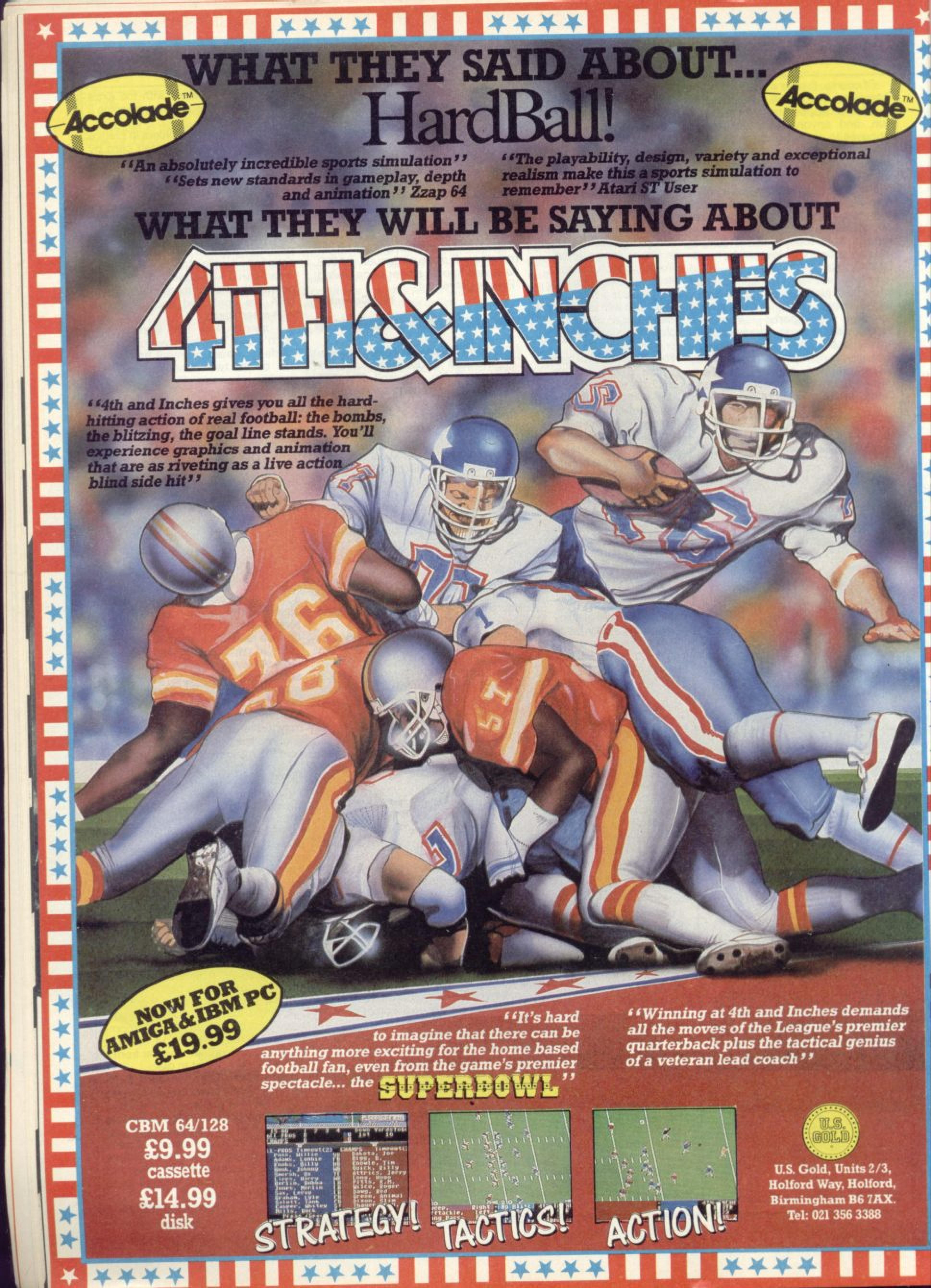
Your average smart card costs around £3 to make, compared with 10p for a normal magnetic-strip card. As always, though, costs will decrease as smart cards become more and more common, and the increase in price doesn't really seem too drastic when you consider the capabilities of a smart card compared to a magnetic one.

Besides, smart cards may offer some savings in other ways. British Telecom's phonecards are designed to be used till their credit expires, then chucked away. A smart phonecard, however, could simply be 'recharged' with extra credit when it runs out.

And the card's onboard memory means you could load your most commonly-used numbers on to it, then just select the appropriate number from a menu when you want to dial.

There's no doubt that smart cards will have a great effect on our lifestyles when they're available on a large scale. I only hope that the powers that be can get all the different smart-card systems to interact properly – I don't relish the though of the entire contents of my bank account being forwarded to British Telecom every time I try to use a cashpoint machine. . . .

Richard Henderson



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ROB STEEL'S GETTING ADVENTUROUS

STEEL SHAVINGS

It's not that *Zak Mckracken* is the best adventure I've received this month (though it comes close), it's just that if you'd met someone as persuasive as Sue Baker (Epyx/Lucasfilm European Project Manager) you'd also feel obliged to review her products. The fact that she is a stunner is neither here nor there . . .

ZAK McKRACKEN AND THE ALIEN MINDBENDERS

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ET is phoning home with a vengeance! Space aliens have built a machine that, via the telephone system, is slowly reducing everyone's IQ to single digits (not much of a reduction for some of us)! The only person who has a chance of stopping them – with more than a little help from you of course – is Zak McKracken, daring reporter for the National Inquisitor.

Fortunately for Zak (and Mankind as it happens), there are friends on whom he may call for help: Annie (without her gun), head of the Society For Ancient Wisdom and her two buddies, Melissa and Leslie, two Yale coeds who claim to have travelled to Mars (base for the alien attack) in a converted van. These four unlikely heroes, guided by you, attempt to piece together fragments of an ancient puzzle, unmask the aliens and destroy their machine.

The game is presented predominantly as an animation window, below which sits the sentence line for input, action words available – the vocabulary changes to suit the situation – and your inventory. At the very top of the screen is the message line.

Sentences are formed by pointing the cursor at actions, characters or objects (either text or graphic), and clicking. Commands such as Walk To, Open, Pick up and Use are available.

More complex sentences are constructed by, for example, clicking on Use, the crayon and the piece of wallpaper. The program adds adverbs automatically, thus the complete sentence should read 'Use crayon with wallpaper'. A click of confirmation and, if it's possible, the instruction is carried out.

Work, rest and play

There's plenty to do in each location. Zak's bedroom alone conceals a number of necessary objects and some intrigueing loose floorboards. As the heroic quartet are able to carry a ridiculous number of items with them, regardless of bulk, and due to the alien element in puzzles/solutions, pick up everything that isn't screwed down.

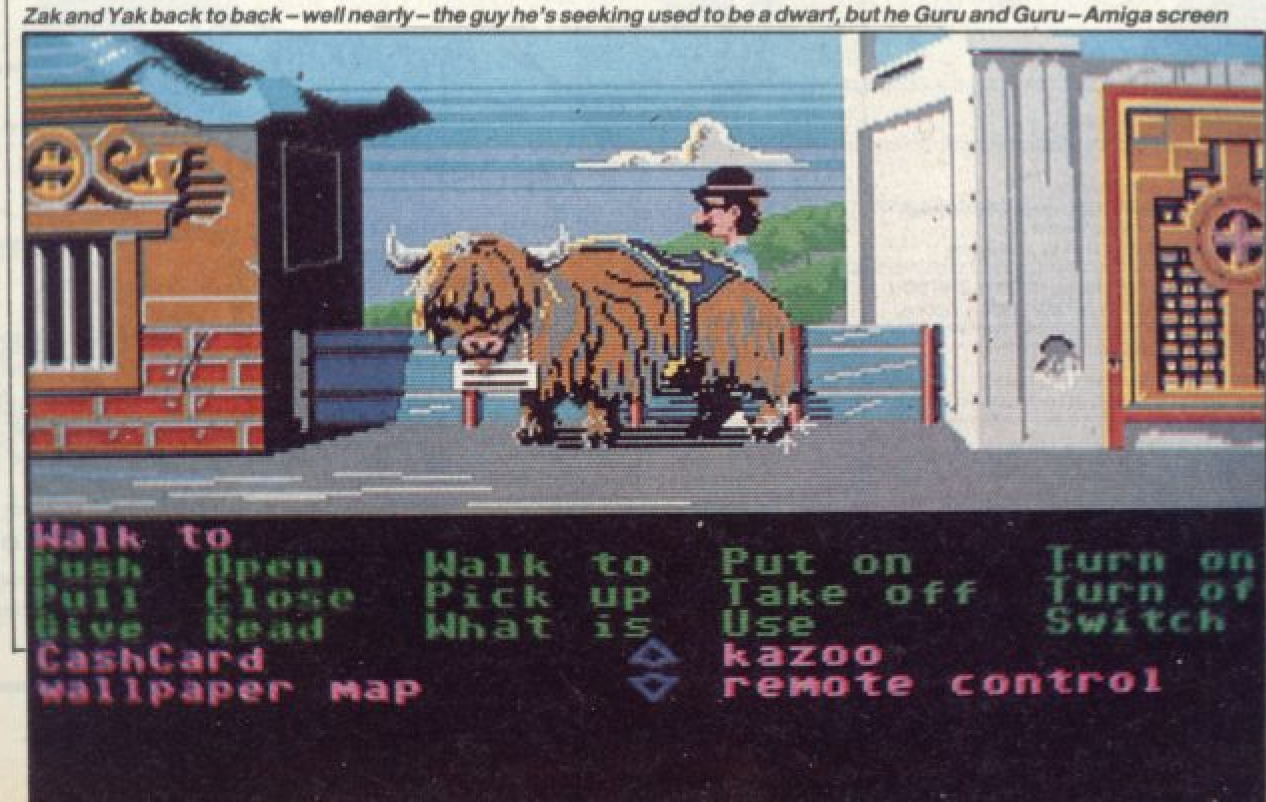
If his cashcard holds out, Zak's adventure takes him to many places: Stone Henge, Miami (unfortunately closed for repairs), Nepal and numerous bustling airport terminals. And his quest isn't confined to earth, to finally put paid to the aliens' plans, he travels to Mars (where the game loses atmosphere) to hopefully open new doors in his adventuring career.



The all-important bus, complete with impatient driver, ready to take to take you to the airport – Amiga screen

Patience is a necessity whilst playing (though not so much on the Amiga version): The flash of light created in your mind upon reaching an inspired solution to a particular problem can be dimmed by the slow pace at which Zak and his chums carry out your orders. However, the pictures, animation and messages along the way are sufficiently amusing to render the trek non too arduous.

Zak and Yak back to back – well nearly – the guy he's seeking used to be a dwarf, but he Guru and Guru – Amiga screen



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VOTE FOR THE BEST IN 1988

Computer Leisure Awards

For the first time ever, you will be able to join with the readers of many other British magazines to decide who and what was best in 1988. Awards will be made to software producers resulting from your voting through, this, your own magazine, for what you considered to be the best games you have played on your computer during the past year.

Many other magazines are carrying this voting form. It means the results will truly be democratic, and therefore really mean a lot to those who receive them.

The votes will be collated by an independent company, to whom you should post your voting form, and the awards will be presented at the Computer Leisure Industry's 'get together' — Computer Arena — in March 1989.

So, simply fill-in the voting form below, cut it out (or photocopy it) and send it to:

GAMES OF THE YEAR
MICHAEL BAXTER
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COMPUTER LEISURE AWARDS 1988 VOTING FORM

Closing date 25th Feb'89

1) Please tick the computer format you are voting for:

- AMIGA ☐
- AMSTRAD CPC ☐
- ELECTRON ☐
- COMMODORE 64/128 ☐
- PC COMPATIBLES ☐
- ATARI ST ☐
- SPECTRUM ☐

3) Please state what you consider to be the BEST **GAME OVERALL** of 1988:

4) Which Software House do you choose as being the most consistent in producing high quality computer games during 1988:

2) Please name your choice of best game (from the format ticked above) of 1988:

1. **Best ARCADE game**
2. **Best ADVENTURE game**
3. **Best STRATEGY/WAR game**
4. **Best MUSIC with game**
5. **Best USE OF GRAPHICS**

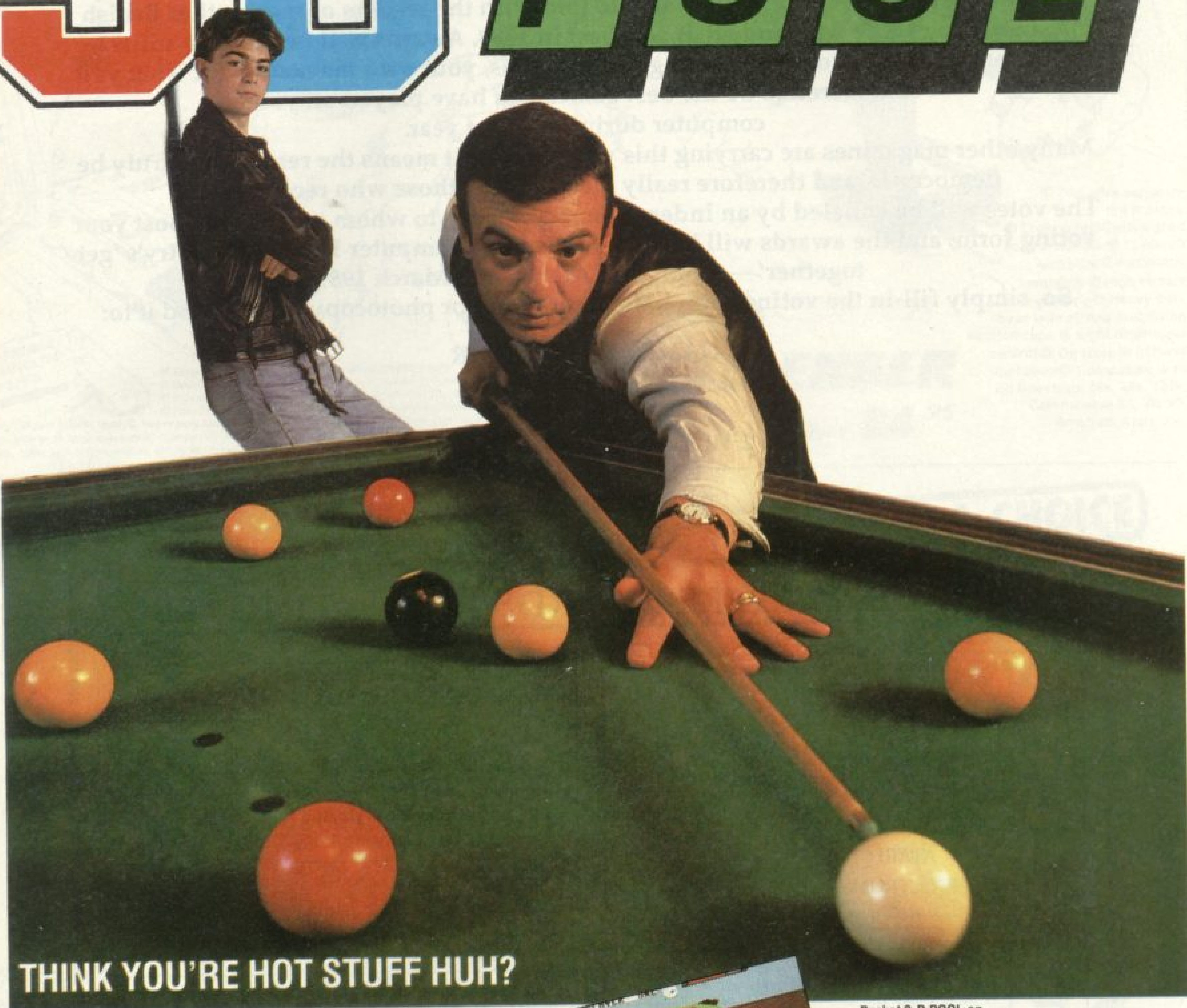
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3D POOL



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European champion 'Maltese Joe' Barbara is waiting to rack 'em up and blow you out.

Unlike any other pool simulation, 3-D POOL incorporates a unique "move around the table" feature — allowing shots to be played from any position, just like in a real game.

3-D POOL will take all your skill to master and if you do get that lucky break, how about entering the nationwide 'Maltese Joe' high score competition with the chance to play a real frame with the champ. Full details in every box.

Cue up for a shot at big Joe.



BBC screen shots



BBC screen shots

Pocket 3-D POOL on . . .

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FIREBIRD

A LEGEND IN GAMES SOFTWARE

Telecomsoft, First Floor, 64-76 New Oxford St, London WC1A 1PS.

The Games machine REVIEW

60 ■ PHANTOM FIGHTER

The fleshy little Korts never did anyone any harm, but the Farronzark fleet invaded their planet anyway. Now the Korts are rebelling and reducing the colonies to dust with a bizarre collection of spacecraft. In this hot scrolling shoot-'em-up from Martech, you've been given the task of eliminating the Kort fleet using your multi-weapon ship, with only a handful of icons to help you. 'Probably the best PC shoot-'em-up in the world.' And it's not bad on the Amiga, either.





The Games machine STAR PLAYER

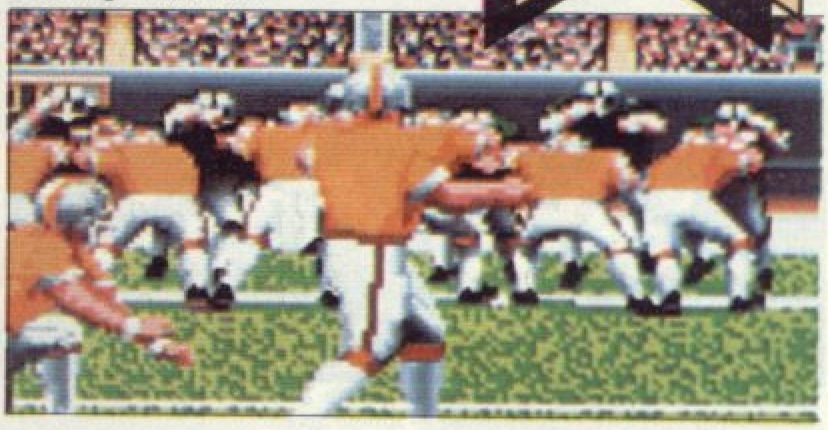
48 ■ LED STORM

This Capcom coin-op may not be a name on everybody's lips (probably 'cause they're still tied in knots from saying this sentence), but with this great multi-format release, US Gold have shown us that it certainly should be. On the violent roads of the future, you drive a raunchy roadster which leaps and bounds over treacherous gaps and evil motorists, and even gains car-crushing powers by picking up power icons. A road- (and Robin) hogg's dream, *LED Storm* is one of the most playable racing games yet.

40 ■ TV SPORTS: FOOTBALL

Would-be Joan Collins' can now out-do their soap idols with huge 'n' bulky shoulder-pads — Cinemaware have branched out from medieval conquerors and heroic jet-packers to the sporting world of American Football. *TV Sports: Football* mixes detailed use of tactics with joystick dexterity and high quality graphic definition and animation. Reviewed here on the Amiga but soon to grunt on other formats, movie-like intermission screens polish presentation to create a simulation so effective you'll think you're watching Channel 4.

The Games machine TOP SCORE



The Games machine TRASH

36 ■ SPITTING IMAGE — C64

If you thought the TV programme was unfunny, wait till you see the game! *Spitting Image* features poor gameplay across all formats, but the C64 version dies on its feet thanks to naff graphics, stodgy animation and a negative playability factor. It even mentions Barry Manilow on the packaging... Three times!

PRESS ANY KEY

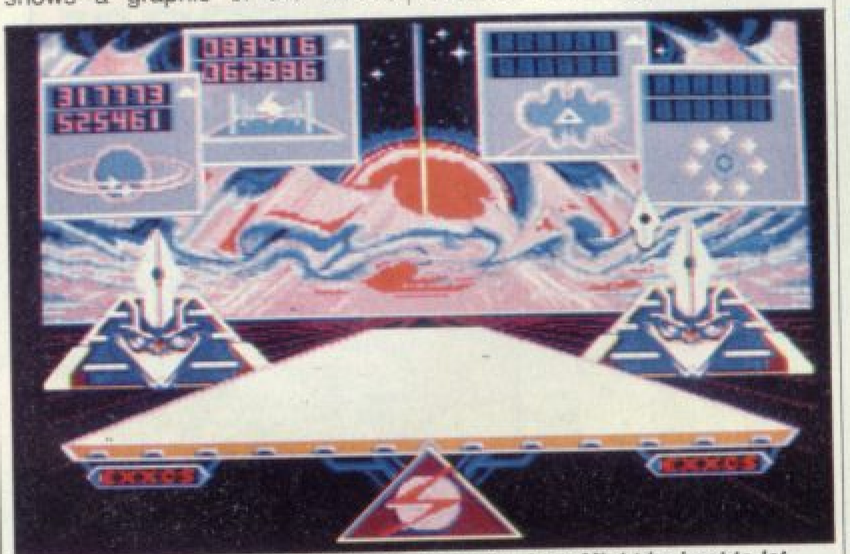
PURPLE LIKE

PURPLE SATURN DAY

Infogrames

Every 29 years 167 days — a single year for the planet Saturn — the galactic games are held. They are the brainchild of Hanz Morlok — uncle to Bob Morlok (AKA Captain Blood) — inventor, alternative medicine expert and pizza playmate. Eight forms of at least semi-intelligent life are gathered and paired up to compete in four events.

The options screen shows icons of the four events, which may be selected for practice. Otherwise, the Purple Saturn Day logo is displayed showing pairings for the quarter finals. Profiles on competitors can also be selected, this shows a graphic of the aliens,



The option screen surrounds an alien's profile box. Might be best to let him win, his nibs looks pretty mean — Amiga screen



ITronic Slider section:t's no good firing at the badly drawn opponent's ship, it's hitting the energy ball that gains points — Amiga screen

their top scores, success percentages and characteristic ratings: agility, mental fluid, aggression, temporal flux (time-travelling ability), size and eyesight.

Events are played in any order and in direct competition with your opponent.

Ring Pursuit (Mastering Space) is set amongst Saturn's asteroid belt, where competitors race to complete a circuit. Red and yellow static-spacecraft act as markers which the leader passes right and left respectively. Points are awarded for leading and correctly passing markers — incorrect manoeuvres give the opponent points.

Taking place in a rectangular arena, displayed in perspective, Tronic Slider (Mastering Energy) has competitors firing at an energy ball. When hit, it fragments and the pieces of energy are collected for points before another ball is generated.

Brain drain

A plan view of a symmetrical electronic circuit provides the location for Brain Bowler (Mastering Mental Waves), where each player attempts to guide electrical charges from their side of the brain to the centre. To do this, switches must be flipped and charges coaxed over bridge components with an electro-ball — a living cursor fired at the circuit from a high vantage point. Condensors are used to energise the electro-ball so that chips can be activated to complete a path to the centre, but progress is hindered by opponents evil doings.

Energy in the form of fast-moving sparks is collected to fuel the gravity-catapult for Time Jump (Mastering Time). When enough have been collected, the speed of light is exceeded and another dimension entered. The winner is the one who travels furthest through space and time.

This package of four sub-games retains the unusual atmosphere of Captain Blood, and with purples and blues liberally used, has similar HR Giger-influenced graphics particularly in Brain Bowler.

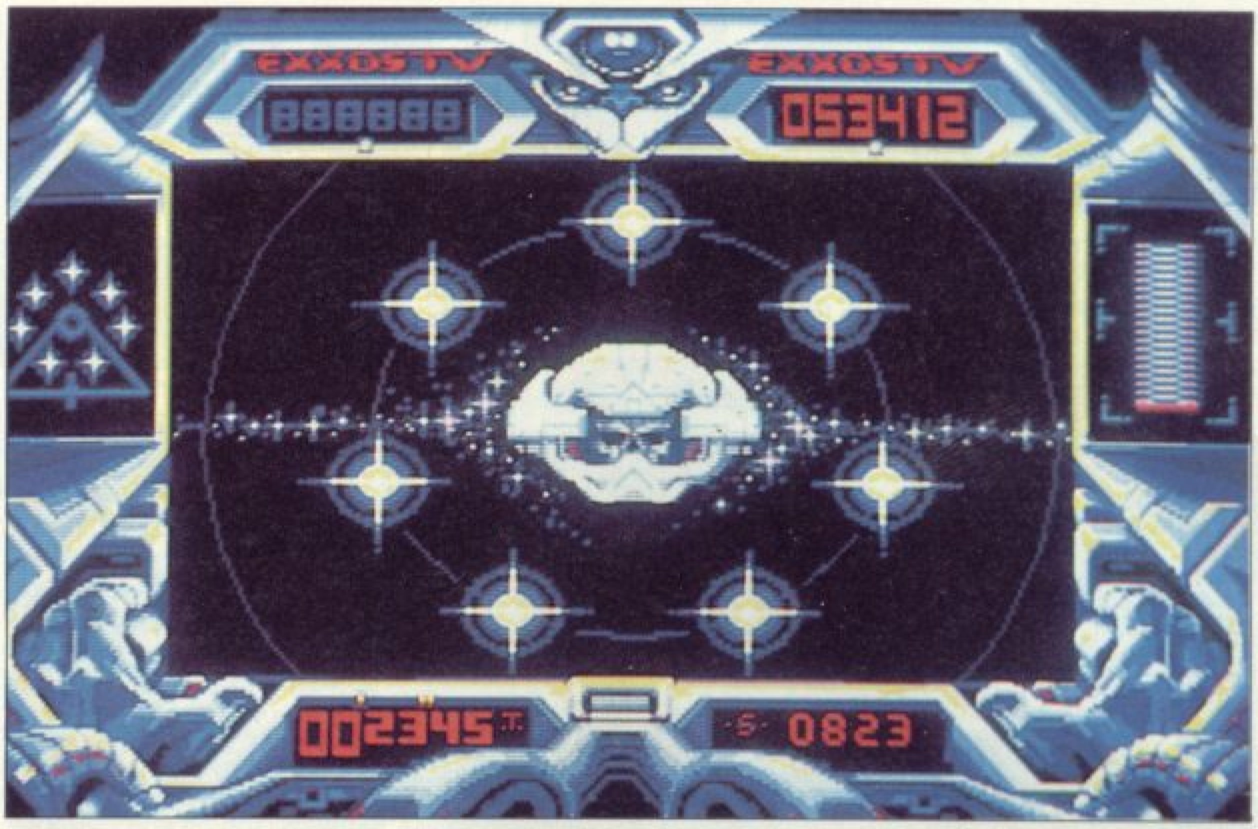
Events are quite simple (particularly Time Jump) but, though well programmed, none generate real enthusiasm. The aliens learn as games are played, and their new characteristics saved to disk, so challenge is always present. But the great anomaly is the lack of a two-player option. This corrected, Purple Saturn Day would be a fun, highly competitive multi-event game, rather than a mildy entertaining one.



There's no fear of a short with circuits this long, the action's shocking and it's all power to the brain

E US

Picture right: *weaving in and out of static spacecraft markers iin Ring Pursuit s quite a headache on its own without having to avoid the asteroids as well. If you're in front you get the points, but at the back it's... well, no good at all.* Below: *pull back on the joystick and collect enough fuel for a time jump. Your objective is to travel further in time and space than your opponent. The picture — Amiga — is actually from the section's loading screen, so don't expect the game itself to look quite this good. This is the simplest of the four events to play, however the reward for winning is an interesting graphical representation of a mutating flower — well what do you expect from another dimension?*





OTHER FORMATS

Commodore 64/128, Spectrum, Amstrad CPC (Cassette £9.95, Diskette £14.95) and PC compatibles (£24.95) soon.

AMIGA £24.95

Other than being a little slower, this is identical to the Atari ST version in all respects.

OVERALL 72%

"Events are quite simple, but none generate real enthusiasm"

ATARI ST £24.95

The unusual colours and artistic designs of the graphics are let down slightly by simple definition in places, such as circuits in Brain Bowler and the enemy ship in Tronic Slider, but on the whole they're well drawn. Objects move at an impressive speed and in the parallax asteroid field it is particularly effective. The sampled title music and jingles are unremarkable but the FX are very atmospheric and often bizarrely futuristic. Visually impressive yet boring to play, the game shows off the ST's graphics capabilities nicely — but what can you do with pictures?

OVERALL 73%

PRESS ANY KEY

VERSION UPDATE

TIMES OF LORE
MicroProse

Atari ST: £24.95

CHAOS reigned in Albareth until the arrival of the Eldens. Their king ruled well and brought harmony to the land with the aid of three magical artefacts.

An ensuing battle against invading barbarians ended in deadlock; to keep the peace the invaders were given the town of Ganestor.

King Valwyn grew weary of rulership, and left for his homeland with the Medallion of Power. Rebellious Elden lords took advantage of his absence and launched an attack on the barbarians. Valwyn does not return, and chaos abounds once more.

After selecting a character from a choice of three, you begin the quest to restore order.

Viewed from above, your graphic self is steered in four directions around the scrolling Albareth. The fire button is used to attack other characters. Objects left behind by slain sprites are picked up via one of the icons at the bottom of the screen Other icons enable you to talk to characters and examine, use, offer and drop objects.

The title sequence is very well done and pleasing to the eye, but is tediously slow. This is in common with the game, which scrolls at a frustratingly slow speed while being equally as jerky as the C64 original. Introductory screens and game graphics are adequate but make little use of the ST. A passable rendition of the soundtrack is given.

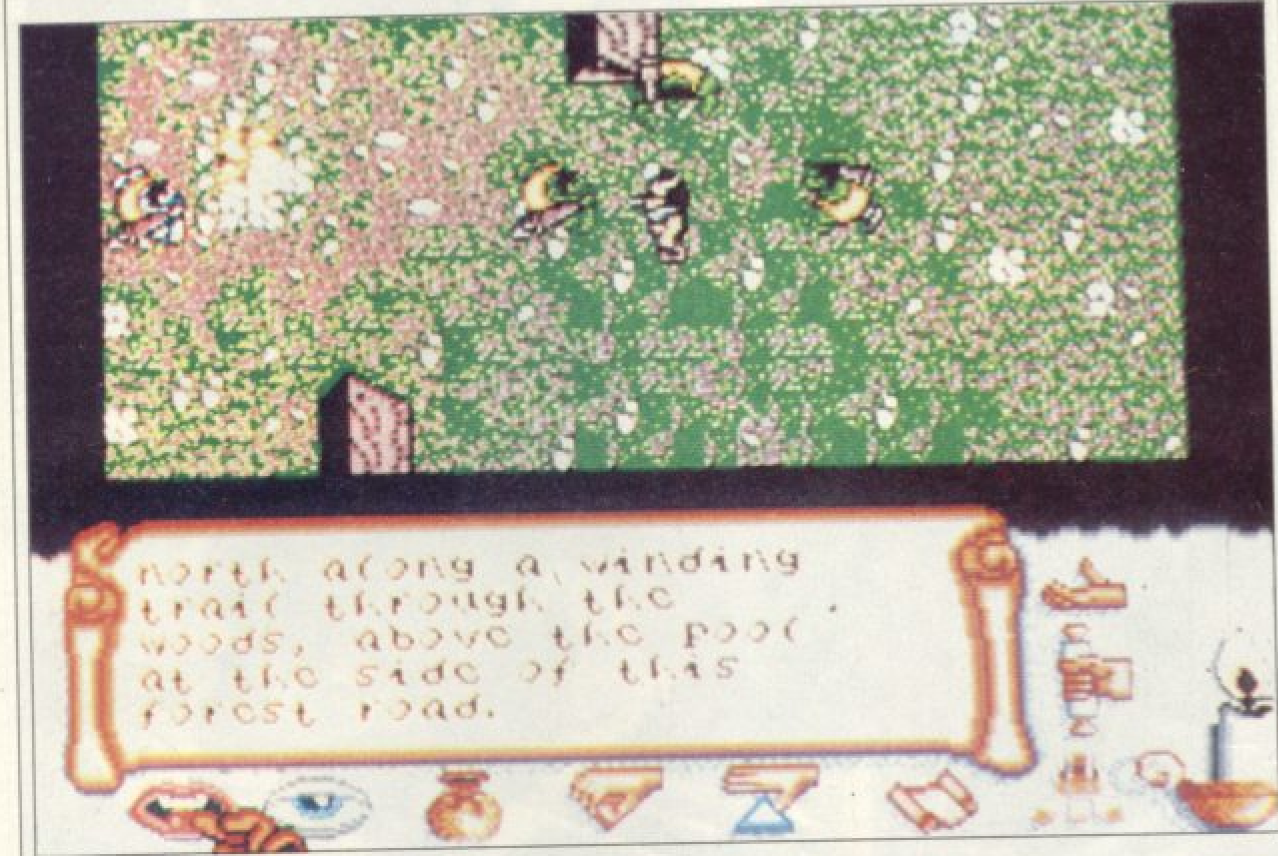
Gameplay speed mars this conversion of an absorbing game, converting it into an exercise of patience.



Your character is selected — a raunchy Valkyrie with a Medusa stare — stone me!

ATARI ST: OVERALL 59%

COMMODORE 64/128: TGM014 73%



Taking a gentle scroll through the fantasy land of Albareth sadly reveals weak ST graphics

VERSION UPDATE

A chequered future

BATTLE CHESS
Interplay/Electronic Arts

PC: £24.95

CHESS programs may not be the most grabbing software, but Battle Chess helps itself by combining the intricacies of the ancient game of strategy with quality animation.

The PC version is as humorous as its Amiga counterpart, featuring chess pieces hacking chunks out of each other and using numerous dirty tricks to rid the board of opponents.

Best appreciated with an EGA or VGA graphics board, animation is as good as on the Amiga, with no noticeable difference in definition _ characters fight and walk in crisp, flowing movements.

Ten skill levels are on offer, along with a dual computer mode and most standard chess options (displayed by hovering cherubs).

Battle Chess places heavy emphasis on graphics, in terms of complexity the game of chess is secondary to presentation. Nonetheless, the end-result is a decent strategy game with humorous, well executed (pun intended) graphics.

OVERALL 81%

AMIGA: TGM012 83%

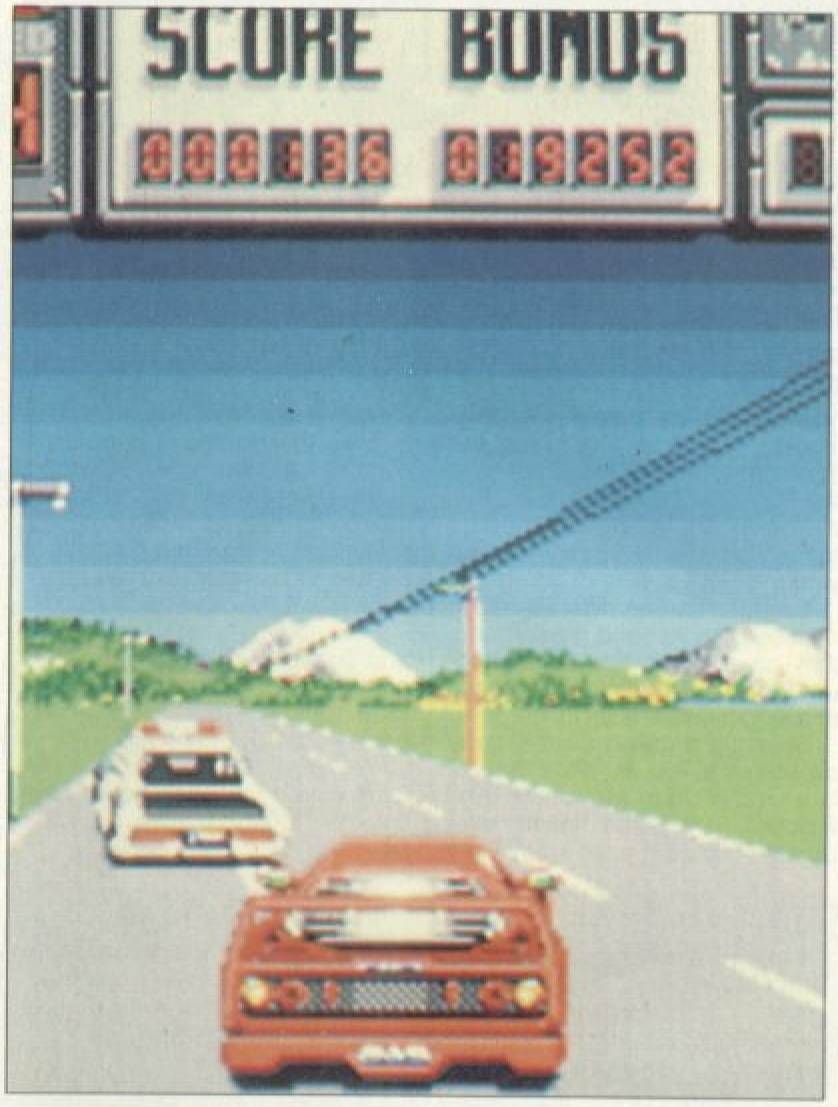


Gratuitous pixel-violence on the scrambled zebra crossing of a game board

TIME IS TIGHT

CRAZY CARS II

Titus



Driving at 200 mph in a Ferrari F40 is a sure-fire way to get yourself in a right state. In *Crazy Cars II* you experience four states (not including panic) in a high-speed bid to rid America of its stolen-car racket.

Corrupt policemen are behind the scam, although straight feds still diligently patrol highways. Deft driving is required as you are against the clock and must avoid law abiding coppers as they attempt to stop you breaking the speed limit — they erect road barriers. The bent coppers (and there's nothing worse) merely try to ram you off the road!

The chances of getting lost are lessened by a road map called up to help you navigate a route from A to B — the easiest way is not always the safest.

You are thoughtfully supplied with infinite cars (necessary as the controls are mega sensitive), it is a zero time on the clock that ends your game.

Left and right, high or low gear, acceleration and deceleration are the only controls you need worry about, although your dashboard is adorned with many useful and distracting gizmos.

Back to your routes

Radar lets you know if there are bears about, score and bonus are constantly on display, as is your speed (choose either kph or mph). In map-mode the cartographical diplay takes up most of the screen and the display to the right of your bonus alternates between time remaining and the number of the road you're on. Whilst you're imitating a bat out of hell, this element also provides information on up-and-coming junctions.

Having all this high tech at your disposal is great — if only you had time to look at it. Take your eyes of the road for a second when cruising at 200 mph and it's Ferrari fricassee time.

Once control of your vehicle is mastered, the feeling of speed provided by Crazy Cars II is brilliant. Although the only roadside obstacles are lamposts, telegraph poles and bollards, the smooth scrolling and fast updating make this an incredibly realistic driving simulation. Backgrounds scroll nicely left to right as you burn rubber taking corners, and hills and dips are so plausible that a hint of queasiness mingles subtly with the excitement of having to take out the next black and white (or brown and white — depending on which state you're in).

The time limit is tight and more traffic on the roads would have been nice, but Crazy Cars II two is a vast improvement on its predecessor and wonderfully compelling to complete.



Junctions, telegraph poles, state borders, overhead wires... and Crazy Cars, too
Whacky, loopy, silly and altogether ma-a-a-ad automobiles make the roads a not-so-safe place

"Take your eyes of the road for a second and it's Ferrari fricassee time"

ATARI ST
£19.95

An interesting piece of music accompanies the attractive loading screen but in-game FX are disappointing. Nonetheless, Crazy Cars II **is smooth, fast, realistic and addictive.**

OVERALL 82%

OTHER FORMATS

Breaking the speed limit is soon to be allowed on the Amiga for a very reasonable fine of £19.95

LEADERBORED

SPITTING IMAGE
Domark

Although Domark have themselves been on the receiving end of *Spitting Image*'s wrath, thanks to their '86 release, *Split Personalities*, time has healed the wounds it seems. They return to the take-the-piss-out-of-all-and-sundry world of latex with a game they claim is more exciting than *Ninja Gerbil*— proud boasting indeed.

You get to play one of six world leaders — including Margaret Thatcher, Mikhail Gorbachov and the Pope — in an effort to beat up the other five in one-on-one confrontations and eventually rule the world.

Each leader has different attack methods, tricks and tactics and they go about duffing each other up in what Domark hope is an amusing fashion. It isn't!

Seeing a drunken Dennis sway on-screen to aid an ailing Maggie is a tired attempt at humour. And watching PW Botha urinate over his adversaries was so funny I wet myself — almost.

Even though this is basically a combat game, one expected more depth than that of *IK* or *Exploding Fist*. Unfortunately, the limitations of four moves, plus a partner to help out, proves otherwise.

Resting wholly on its tie-in with, and so-called humour of, the TV programme, *Spitting Image* fails to rise above the ranks of a very poor man's *Exploding Fist*. If you're buying it for the humour (why else?) you may have a fun time for the first hour— but that's all.

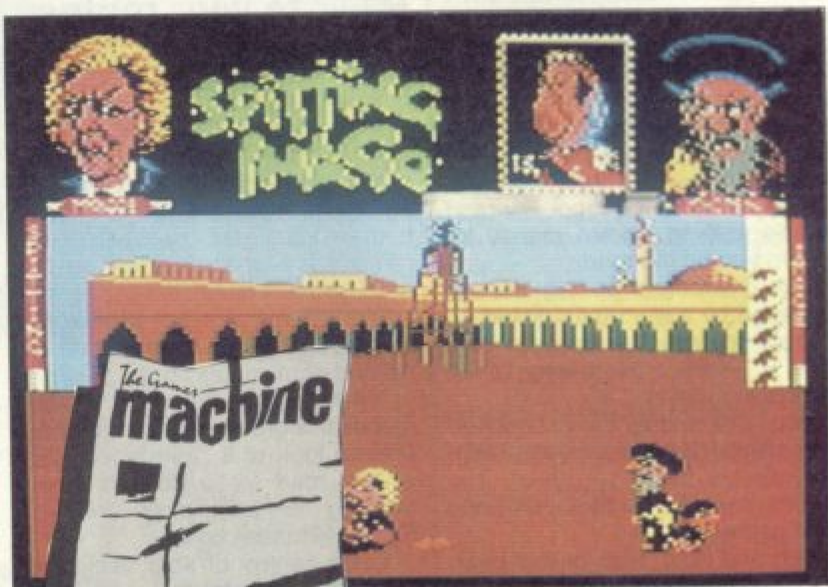


Cigar-smoking, hairless Mags on the Amstrad — she is shorter and I are taller

AMSTRAD CPC
Cassette: £9.95, Diskette: £14.95

Looks the best of the 8-bit versions, though backgrounds aren't brilliant. It plays better than the C64 game, but not as well as the Spectrum. It still lacks addiction, playability, amusement and lastability.

OVERALL 35%



ATARI ST £19.95

Graphics prove the selling point, featuring detailed backdrops and characters to match — these don't help the game in any way though. A limited move, limited interest slapstick fighting game like Spitting Image can't hope to compete with titles like IK.

OVERALL 32%

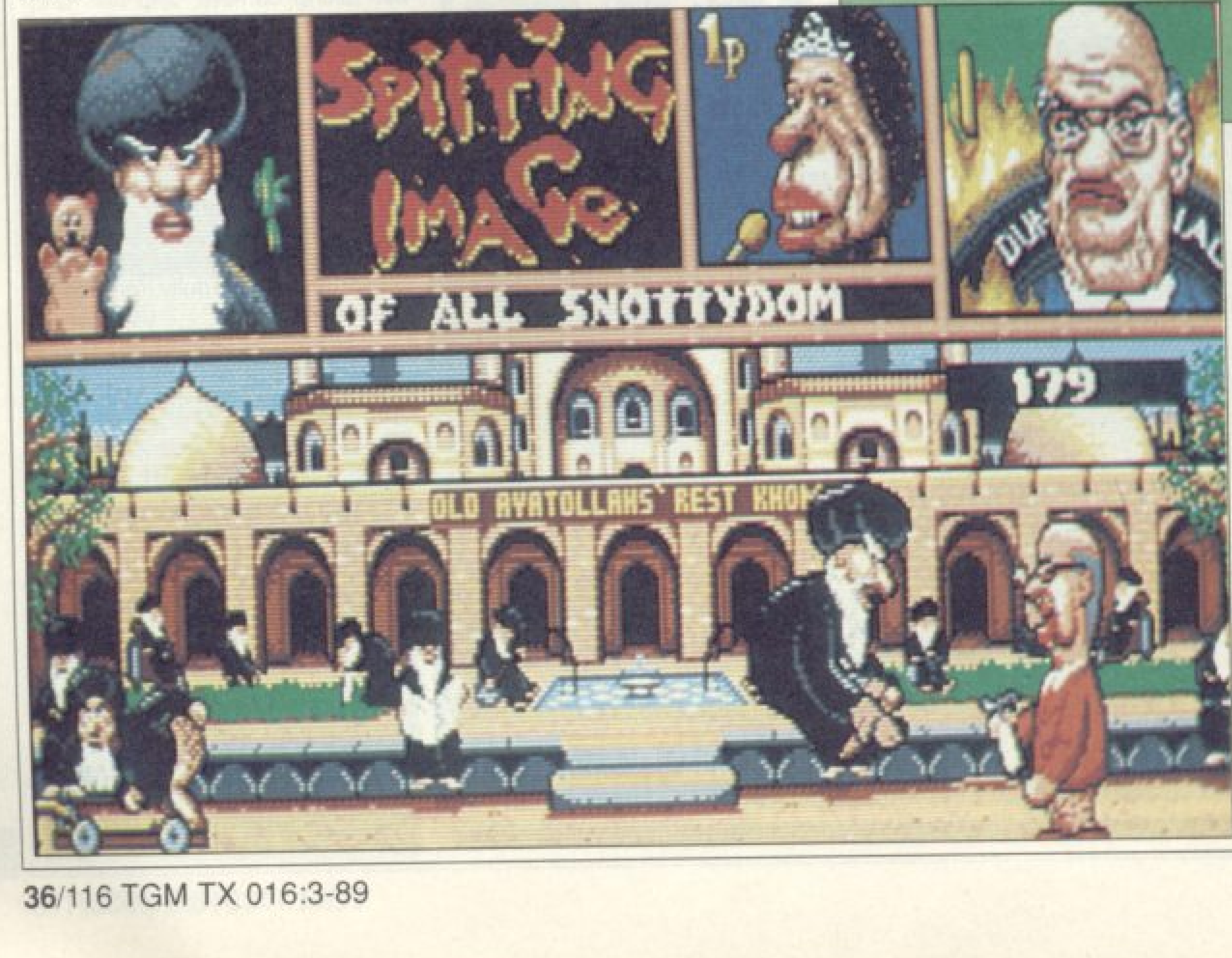
Botha, Sooty and the Ayatollah (below, on the ST), decide to settle their differences in the way they know best — with senseless violence. Right, on the C64 : blocky dwarfs and cheap backgrounds abound in this trashy format

The Games machine TRASH

COMMODORE 64/128
Cassette: £9.95, Diskette: £12.95

Confusion reigns on the C64 and small world leaders scampering around in front of no-more-than-average backdrops don't help. An attractive title screen and front-end doesn't make up for desperately poor gameplay.

OVERALL 28%



SPECTRUM
Cassette: £9.95, Diskette: £14.95

Spectrum Spitting Image is no better to play, but at least the graphics and presentation are better than average.

OVERALL 39%

OTHER FORMATS

Amiga owners may indulge in rubber for £19.95 — if they so desire.

"Fails to rise above the ranks of a very poor man's Exploding Fist"


STORMLORD
SPECTRUM
Cassette £7.99
+3 Disc £14.99
COMMODORE
Cassette £9.99
Disc £14.99
AMSTRAD
Cassette £9.99
Disc £14.99
Demonic powers conceived by the Queen of Evil, contrive to wreak havoc amidst the inhabitants of the Realm of the Mighty
STORMLORD
The ultimate battle between the forces of Good and Evil
HEWSON



It is daybreak. You join the other pilots in the squadron crewroom to discuss objectives for the day ahead. Tactics, combat manoeuvres; all are captured completely by F-16 COMBAT PILOT. During your pre-flight briefing you instruct the ground crew on weapon loading and plan your attack…

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F-16 COMBAT PILOT



Atari ST screen.

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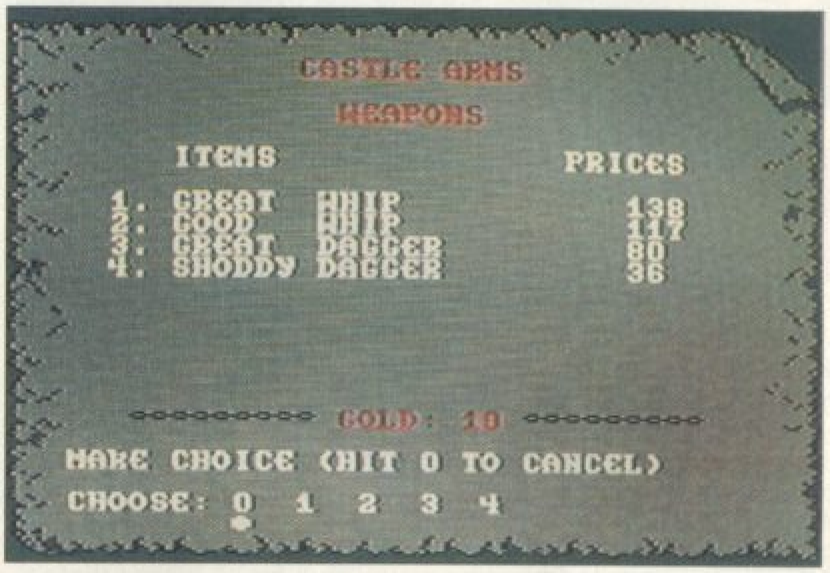
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ATARI ST – £24.95. **IBM** – £24.95. **C64** CASSETTE – £14.95. **C64** DISK – £19.95. AVAILABLE 1989: **SPECTRUM** CASSETTE – £14.95. **SPECTRUM** DISK £19.95. **AMSTRAD** CPC CASSETTE – £14.95. **AMSTRAD** CPC DISK – £19.95. **AMIGA** £24.95. **AMSTRAD** PCW – £

MINE ORE CONFLICT

THE LEGEND OF BLACKSILVER

US Gold/Epyx



Take this opportunity to arm yourself to the teeth — or to the eyebrows if you're less subtle

The land of Maelbane had rich deposits of iron and copper ore which were mined greedily — until the banished mage Minon arrived. He discovered a magiacal rock and took control of the mining industry to get it. No other ore was mined, only the newly-found mineral, Blacksilver.

Blacksilver was the only source of magic on the world of Bantross, and with his band of followers, Minon used its power to make Maelbane prosperous and to form a powerful unquestioning army. They invaded nearby Thalen and took command with ease. Once the land was conquered, however, Minon's minions grew bored, and combat took place between rivalling wizards and their armies. As they used more and more magic to fight each other, the Blacksilver deposits disappeared and Maelbane sank into the ocean, leaving the magicians powerless.

Peace returned for 27 years, then the reclusive Baron Taragus re-discovered Blacksilver and mined it. Learning of the Baron's plans for domination, King Durek set out with his best knights to eliminate the forces within Taragus' fortress. It ended in disaster, the King was kidnapped and the fortress magically vanished.

Now, the wizard Seravol has advised the troubled Princess Aylea that a massed attack against Taragas will not work; a single heroic warrior must defeat him.

Attribute to RPGs

Needless to say you are that warrior, shown on-screen as a small white figure surrounded by a plan view of your immediate area. Your character has five attributes — Strength, Endurance, Dexterity, Intelligence and Charisma — which begin at 15 and increase with experience or decrease with misfortune. As standard for RPGs, Hit Points indicate your general state of health, their maximium number is experience related.

There are 17 commands, accessed from a column at the left of the screen, allowing standard actions such as taking and using items, casting spells, attacking assailants, and examining your surroundings. Some commands lead to a sub-menu of options.

The adventure takes place over various terrains (grassland, forest, desert, swampland and so on), each type featuring its own array of inhabitants.

The Legend of Blacksilver scores no points for originality as the game design and general plot have been seen many times before, especially on the C64. The screen display is crude and, unlike *Ultima V*, commands are not sophisticated enough to compensate. The Fight option only allows careful or reckless attacks, rendering hostile encounters extremely boring. Communication is basic in that you have no control over what you say, other than asking questions which require a yes/no answer.

The playing area is large and there is much to do, so although the idea is old and quite simple, there are many hours of play available for those who feel a need to indulge.

COMMODORE 64/128
Diskette: £14.99

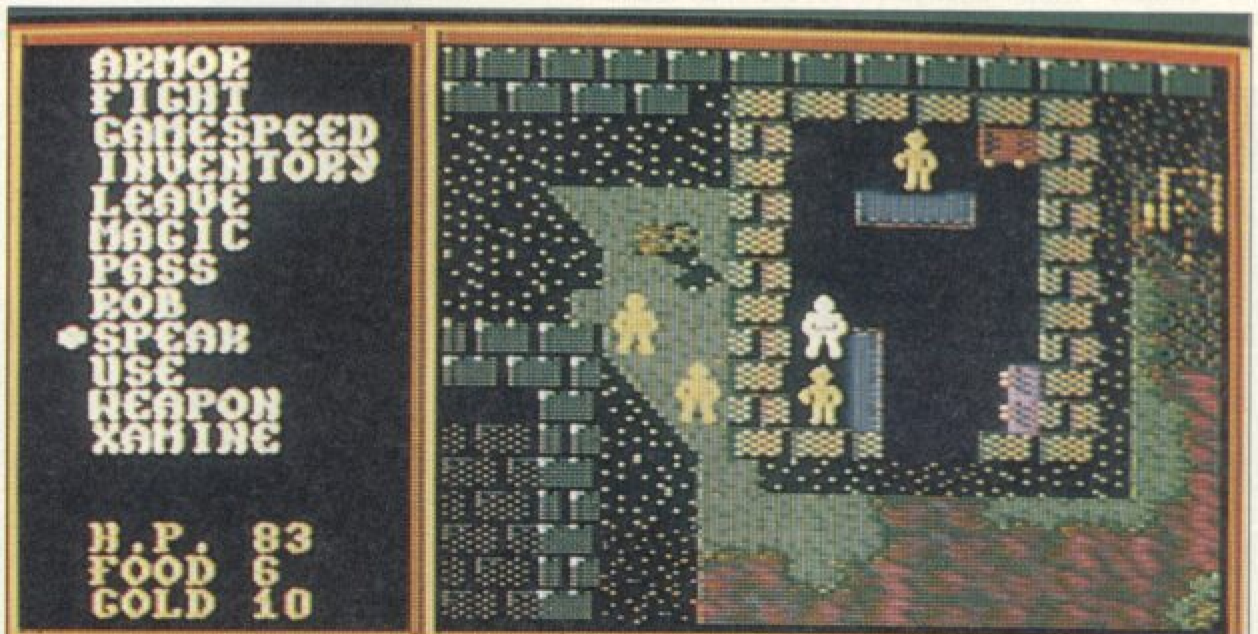
Landscape and characters are crudely defined — reminiscent of the ancient Temple of Asphai trilogy — and animation is equally basic. More care has been taken in drawing the isometric 3-D tunnels and monsters of the dungeons, but the attempts at animation are poor. An irritating title tune and sparse effects provide the backing.

OVERALL 59%

"The Legend Of Blacksilver scores no points for originalty"

OTHER FORMATS

A PC legend soon, £19.99.



You too can become a heroic postboy in The Legend Of Blacksilver

TV SPORTS: FOOTBALL

Cinemaware/Mirrorsoft

The roughest, toughest and one of the most popular sports in the USA arrives on the Amiga backed by a winning team. The first of aTV Sports range of software to be released — planned future events include boxing and basketball — the sponsors, Cinemaware, join the sporting fraternity with a history of professionalism and success.

TV Sports: Football puts you down on the fifty yard line for the game of your life. Instead of adopting the severely limited first-person viewpoint of a game — such as in Activision's *GFL Football* — *TSF* is played from above/behind.

The heart of *TSF* is made up of two screens, the play calling screen where tactics are selected, and the field screen, where plays are called and tactics put into effect.

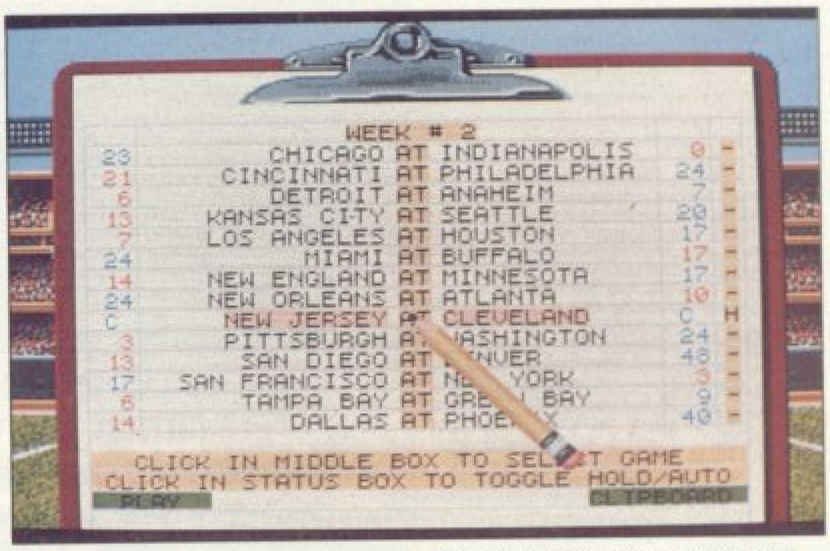
Through the play calling screen, any of four basic team formations are selected together with any of four plays — defence formations are standard for this sport. Inside and outside runs along with blitzes and pass defence moves are also possible. For the offence team, Shotgun, Pro-Set, I Formation and Kick moves can be called,along with any of 8 player moves.

Once all is ready, you begin the match. As the quarterback shouts the calls and yells Hut! Hut! Hut! for no logical reason, the ball flies into the air. Obviously the entire team can't be controlled all at once. Instead one player is under direct control (either a safety, cornerback, linebacker or the quarterback). Whether passing, rushing or blocking, your player has a critical job to perform.

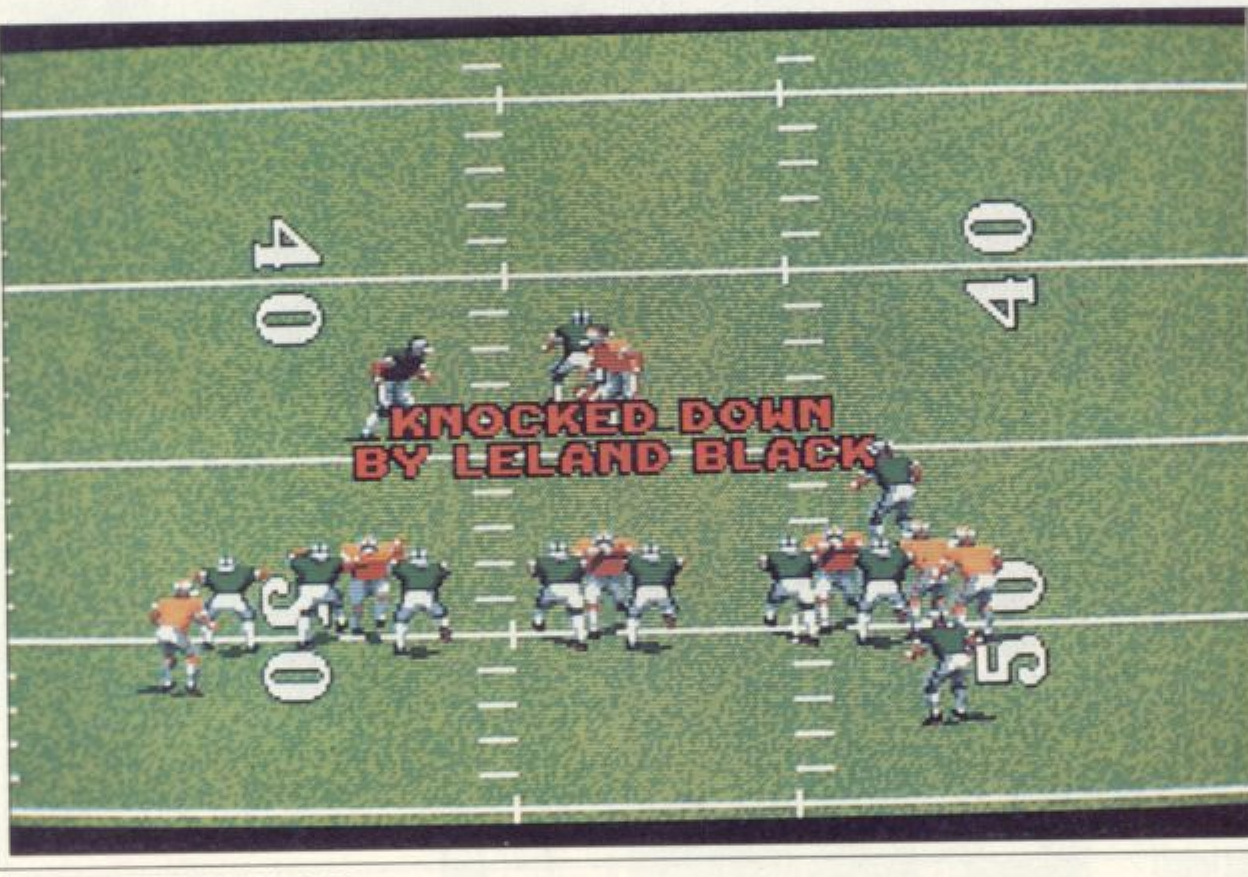
While you're busy with your own team player, the computer controls the others as they try to block the opposition, get into pass positions, attempt to sack the rival quarterback and generally make life unpleasant for the other team.

Action isn't confined to offence and defence: field goals feature cameras zooming in to treat the viewer to a behind-the-kicker ring-side seat. Lining up a cross hair on the football icon, the ball is kicked between the goal posts. The defence can only muster a lone player who leaps up and down in vain to catch a rare low-flying ball.





Put the TGM All-Stars up against the ZZAP! Aquarists. And watch us trash 'em

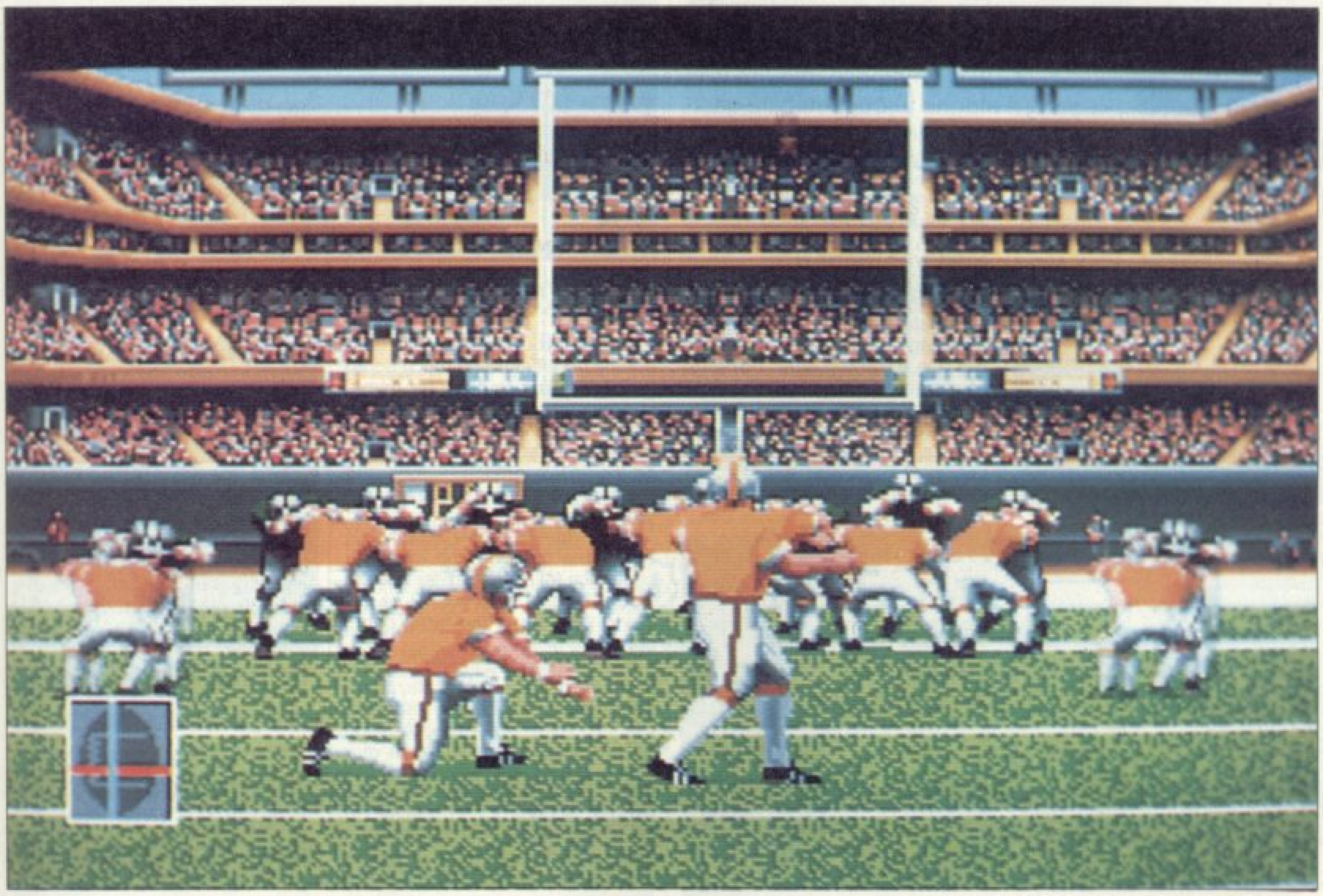


The embarrassment! The degradation! Being stopped by someone with such a ridiculous name!

Kicking punts

Time outs, punts and fake punts, incomplete passes, fumbles, offside calls by the referee and interceptions (complete with speech) are all there to be experienced. Near everything to do with the sport of

PERFECTION



'It's gooood!' — you'll no doubt soon hear the opposing player cry

American Football has been squeezed into the game.

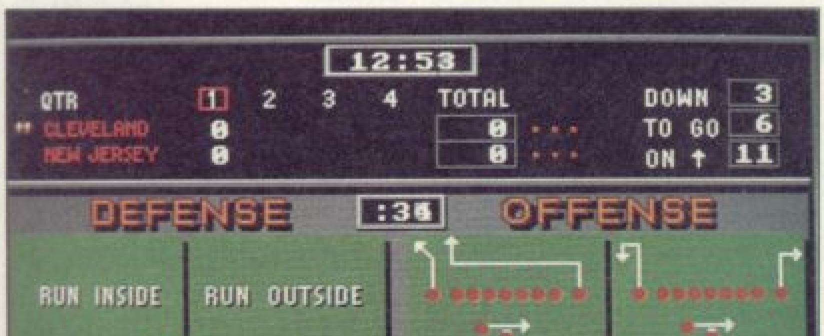
TSF isn't just a single-player game, a player v player mode is included along with a team mates option where two players take on the might of a computer team.

Four options are available: an Exhibition game, practice modes (for kicking and play tactics), a clipboard/statistics screen and league game option. In the latter, 28 teams take on one another in the fight for the Cinemaware Football League trophy.

Flexibility in defining tactics and creating winning plays makes this a very entertaining game, ideal for armchair sportspeople and perfect for American Football fans. However, novices should try before they buy because although the accompanying manual details everything about the sport, the strategy element and degree of waiting around involved may not be their cup of coffee.

The infamous disk access is very low-key in relation to previous Cinemaware games and only slows down the pace marginally (with dual-disk drives it's negligible).

In true Cinemaware fashion, attention to detail and extras abound: adverts, half-time programmes, results and statistics, buxom cheerleaders, an appreciative crowd, waving footballers and more create the fun atmosphere of watching a live game. The overall effect is of a polished and very classy program — perfect for fans of American Football.



Vary your play with the multitude of tactical options

AMIGA
£29.99

Graphically superb, in-game action features small but beautifully formed players complete with realistic animation. Faultless presentation is accompanied by good sampled speech. This is an unmissable simulation for those with an American Football bent.

OVERALL 90%

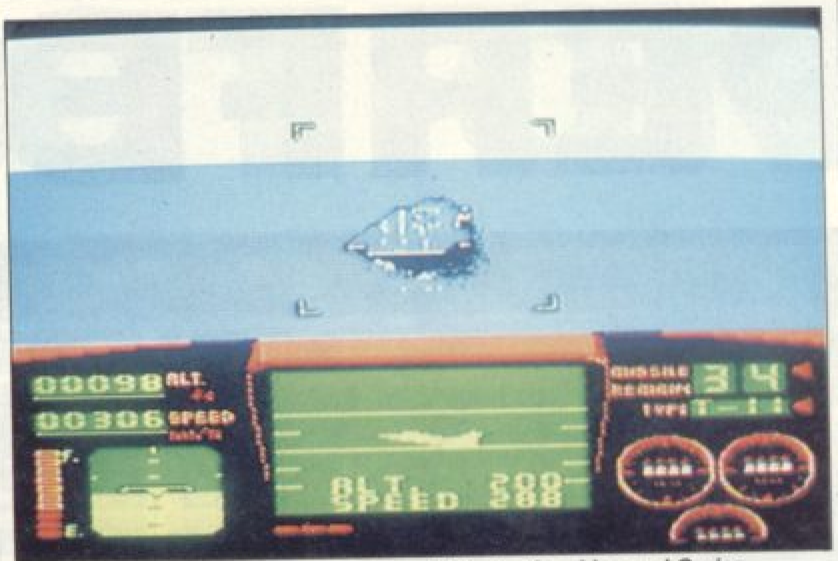
OTHER FORMATS

Cinemaware have decided to wait until the beginning of the next Superbowl season (Autumn 89) before releasing TV Sports: Football **on the PC (£29.99), ST (£24.99) and C64 (Diskette only £14.99).**

"Attention to detail and extras abound"

CRAZY GULF

TOP GUN
Konami



If you aren't in too demanding a mood, take to the skies and Cruise around with this low-brow flight/combat sim

Steam-catapulting from USS Enterprise into the wild blue yonder, your F-14 storms through middle eastern skies to take on enemy MiGs. A real-life situation? Uncomfortably close but fortunately this is only a game.

Things are hotting up in the Gulf, a nameless enemy has successfully taken command of oil fields and is attacking allied countries and the US Task Force. Worst still, if their newly constructed space base launches its killer satellites, the free world goes down the plughole.

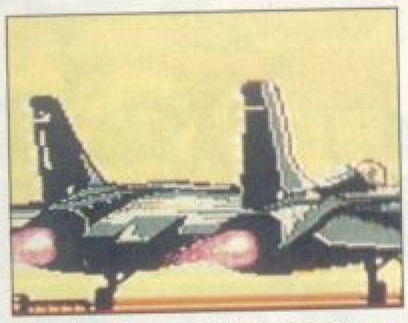
In retaliation, Enterprise is sent to the region and her F-14s launched. Engaging in battle on four sperate missions, Tomcats are up against the enemy's entire air, sea and ground forces.

Before taking off you need to arm your craft — choose weapons to best suit the type of mission you're on. Against enemy fighters any missile will do. Already onboard is a multi-barrelled cannon — just in case you run out of missiles.

Even with a top-class fighter plane strapped to your backside you're not invulnerable. A missile up your tailpipe isn't going to do you much good, neither is taking too much damage from cannon fire. Similarly, any enemy that latches onto your rear has to be shaken off pronto, else you're going flying without wings.

MiG-air clash

The first mission is just a case of surviving an onslaught of fighter jets. On the three other missions, your main priority is a well-protected major enemy target. Against naval forces the target is an aircraft carrier, over land it's the enemy fortress and the last mission is against the space base.



Give the nice man a wave before you taxi along the runway and burn him to a pile of smouldering ash with your jet engines

Should you manage to turn enemy targets into so much scrap metal, it's time to head for home. Landing on the carrier is the final challenge as your jet attempts to maintain a set speed and height on the final approach — miss and the taxpayers are going to have to fork out again.

When fuel gets low a tanker is called into the area, the refuelling sequence follows a similar style to that of landing, with your F-14 trying to hook up to the flying petrol pump.

As in many Nintendo games, the emphasis is on playability rather than graphic presentation. On this level *Top Gun* succeeds as it provides four limited, but very playable missions with extra features — landing, refuelling and a missile strategy — to spruce up the action.

NINTENDO
£29.95

An atmospheric picture of your Tomcat starting up kicks off the action, although in-game graphics are little more than a detailed cockpit and fast moving enemies. Limited three-dimensional movement belies the real F-14's manoeuvrability but remains acceptable. A pleasant anthem and in-game tunes beef up the otherwise weak spot effects.

OVERALL 65%

> **"Top Gun provides limited, but playable missions"**

VERSION UPDATE

RAMBO III
Ocean



ATARI ST: £19.99

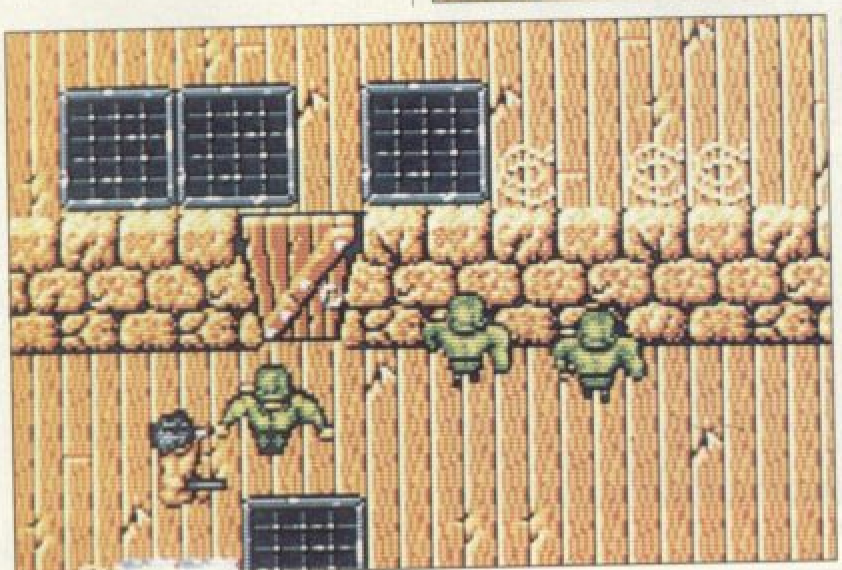
RAMBO'S off on his anti-communist escapades again, this time to rescue Colonel Trautman from the clutches of evil Russkies.

In the first of three sections, muscle-brain moves around a Russian fortress searching for his imprisoned Colonel. Once old Trautman is rescued Rambo makes his way North through the second section. The final part takes place in Operation Wolf style asRambo rumbles along in a stolen tank towards the Afghanistan border.

ST owners may not like the lack of a scrolling play area (which could have easily been added) but *Rambo III*'s appeal lies in its cross-breeding of arcade-adventure action.

Looking earthy, with wooden floorboards, crates, walls and objects all featuring low-key shading, *Rambo III* features high-graphic detail.

Mistakes are easy to make and, due to a lack of save option, having to repeat moves becomes tiresome and lessens the game's-appeal. However, this type of game is still quite rare on 16-bit and as such is entertaining enough to warrant a look.



ATARI ST OVERALL 70%

COMMODORE 64/128: TGM016 72%

SPECTRUM: TGM016 72%

Above: *Soldiers and trucks compound to confuse our hero's big feet and tiny brain*
Left:*Froggy went a courting and he did ride, Ram-bo...*

LOITERING WITHIN TENT

CIRCUS GAMES
Tynesoft

Ladies and gentlemen, boys and girls, we proudly present...Warren, the famous Birmingham artiste. Watch and wonder as Warren competes in international circus competition...' Now every Tom, Dick and TGM reviewer can experience the thrills of performing amazing feats in the Big Top.

The options are standard for multi-event games: you practise events or compete in one or all of them. Up to four players can take part and be human- or computer-controlled.

The dizzying heights of the Top are tackled first with the dextrous footwork of tightrope walking. Balance is kept by adjusting the pole you carry, but to gain substantial points you must perform tricks while traversing the gently swaying rope: somersaults, handstand, cartwheels, and a 180 turn. Fall, and one of your three lives is lost. Success leads you to the second stage, where the wire is crossed on a unicycle.

Performing a quick sex-change (not part of your act), you becomea female bare-back horse rider and, once in the saddle, attempt to perform a number of moves. Stand, sit, handstand, jump to left or right, spin left or right, and somersault are required for the set-move sequences.

Nothing more than felines

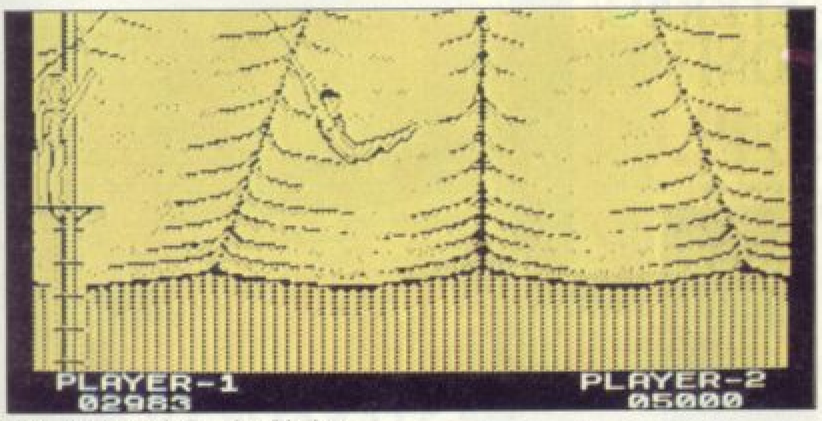
Up in the air again to be a daring young man on the flying trapeze. Left and right movements build up your swinging speed and a plan view shows you when the trapezes swing closest together. In your three-part performance, you first swing from trapeze to trapeze, then perform a corkscrew and somersault as you go, then a double or triple somersault before being caught by a second artist.

The final event is the most dangerous — training extremely ferocious tigers. You attempt to guide three fangy felines across an obstacle course, using a whip as an incentive. A wary eye should be kept on the tigers' Threat Meters — they tend not to like being told what to do. A chair can be used to keep them at bay, but it's all too easy to become a tasty tiger-treat.

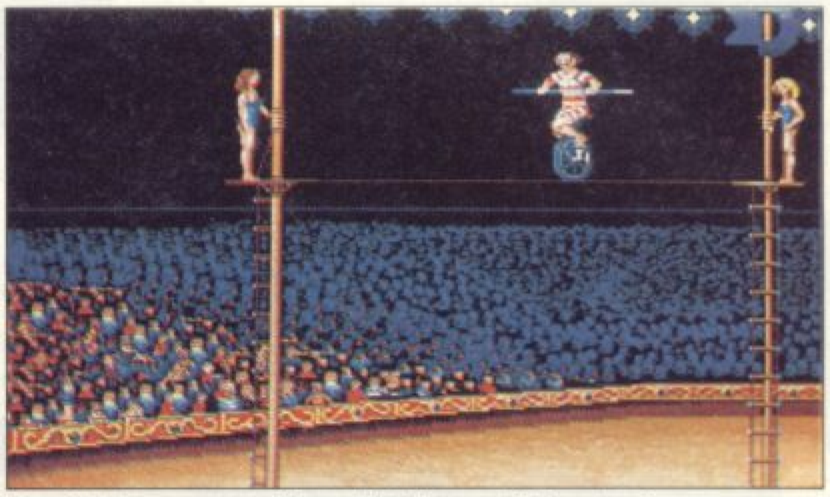
A circus olympics is an original, if silly, idea, but disappointment is expected even before the game is loaded, as there are only four events (acts). And because the acts aren't exceptional, *Circus Games* is doomed to limited lastability.

The difficulty level for each event is constant across the versions: tightrope walking is quite easy, tiger training too difficult, but more importantly, none of the acts hold attention for long.

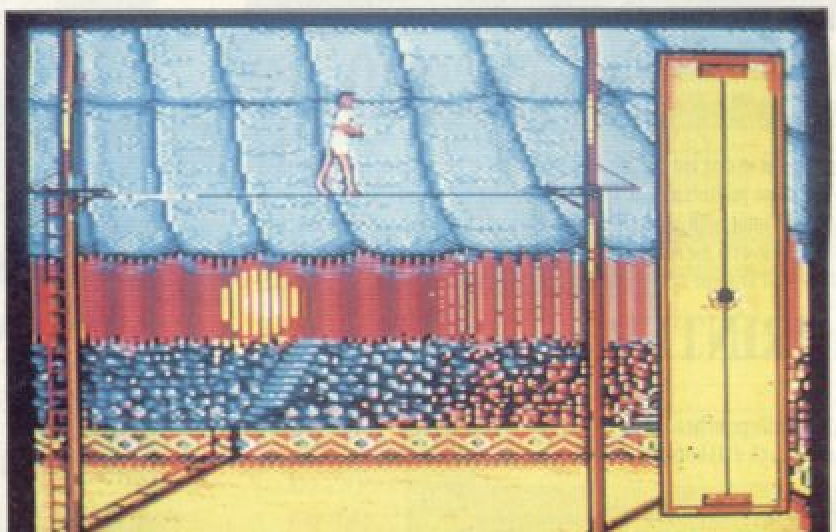
Circus Games is simply too expensive for what little entertainment it offers.



He sails through the air with the greatest of ease, on the flying trapeze — Spectrum screen



'Care-ful-ly, zee amazing Warren 'Ninja' Lapworth (above) makes eez way across zee slender C64 wire...' Next (below) he's got to make it across on a pogo stick whilst juggling three pears and an avocado and balancing a stick of rhubarb on the end of his nose — Amiga screen



PC
£24.95

Colour-restrictive CGA is the only graphics option available, so all the fun of the circus is a weird mixture of aqua blue and pale purple. This aside, graphical presentation is reasonable, and surprisingly, the PC gives the best rendition of the main circus tune.

OVERALL 42%

COMMODORE 64/128
Cassette: £9.95
Diskette: £14.95

Passable backdrops are ruined by mutated sprites. Tightrope walking is made extremely difficult by the walker design: it is often impossible to tell which way the balance pole is tilting. Various tunes burble away in the background, made worse by the lack of sound effects.

OVERALL 40%

SPECTRUM Cassette: £8.95 Diskette: £14.95

Middle-of-the-road sprites often become obscured in the detailed monochrome backgrounds, and the ring master gradually becomes more of a mess as the competition progresses. When colour is used on characters, the update is slow, so that it lags behind the sprite.

OVERALL 36%

AMIGA
£24.95

Pleasant circus scenes support adequately defined and animated sprites. The graphical highlight is the tiger training — the big cats walk with graceful realism. One or two sampled sound effects and mildly irritating circus tunes are an uninspiring soundtrack.

OVERALL 43%

OTHER FORMATS

ST (£24.95) and Amstrad (cassette £9.95, diskette £14.95) to follow shortly.

"Circus Games is doomed to limited lastability"

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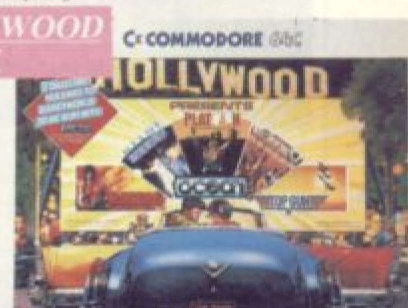
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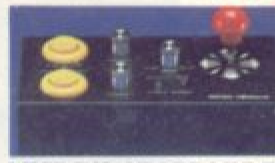
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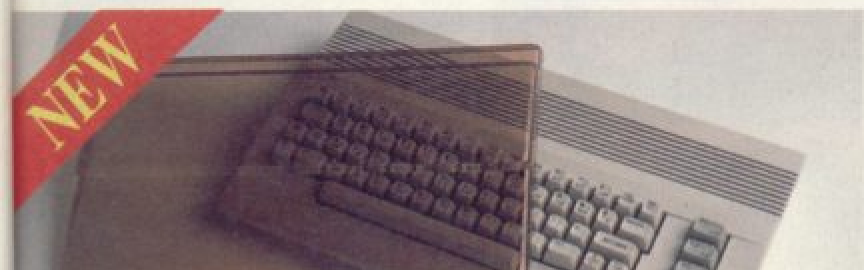


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DIRK MEETS AN OLD FLAME

DRAGON'S LAIR

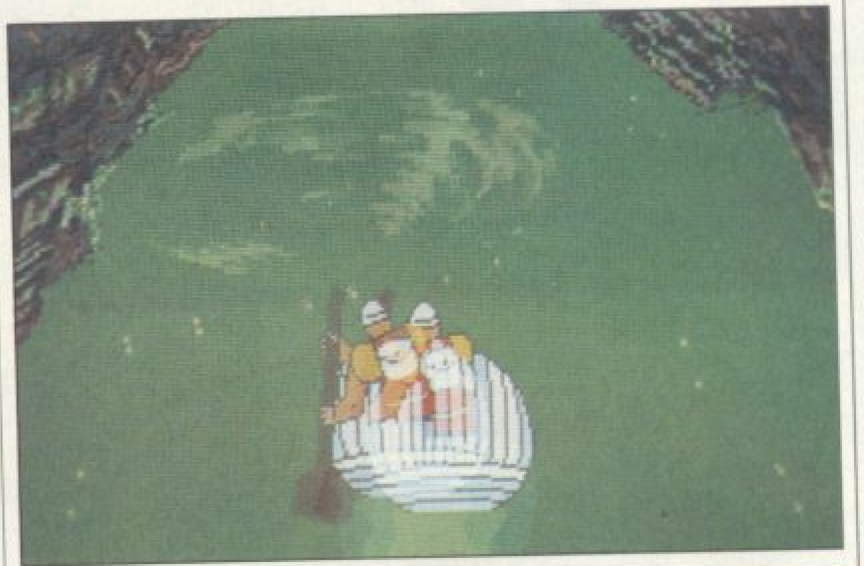
ReadySoft/Entertainment International

In 1983, a coin-op appeared in the arcades which caused quite a storm and developed a cult following. Though six years is a very long time in the field of 10p-eaters, *Dragon's Lair* still generates interest, as shown by the response to our feature on *Journey Into the Lair* — a laser disc game for the ST based on the coin-op — in TGM**009**. It was translated to 8-bit pixels by Software Projects, but now it's time for the graphical power of the Amiga to be seen, courtesy of programmers, Visionary Design Technologies.

The hero of the tale is one Dirk the Daring, a brave and dynamic knight who is also a bit of a fool. Like all characters in the game, he was created by ex-Disney artist Don Bluth. Whatever his shortcomings, Dirk likes to do what knights do best: rescue damsels in distress. In this case the fair maiden is Daphne, a princess trapped deep inside a huge, spooky and cobwebbed castle. Captured by Singe, the less-than-jovial dragon, she is held in it's treasure-strewn domain — the dragon's lair.

It isn't just a case of strolling through the echoey chambers and spiking the dragon, oh no — it wouldn't be much of a game if it was. The castle's various rooms and tunnels are guarded by sneaky traps of vicious and diverse design, and are inhabited by a motley crew of bizarre, malicious beasts.

First crossing a rotting drawbridge above a tentacle-infested moat, you influence the actions of the adventurer using the four main joystick directions and the fire button for a hefty sword-swipe. Objects and portals often flash to indicate possible directions or actions, but can also signify danger. Timing is important for all moves — one slip and Dirk loses one of his three precious lives, usually in a violent or amusing manner. Points are awarded according to the difficulty and number of moves needed for the scene.





'Oh no! In the top picture someone's pulled out the plug!!' Water way to go.
The impressive hi-res mode (above) shows Dirk fighting a weird chemical-monster as it leaps from the cooking pot — Amiga screens



This is how it looks in high-res mode — much the same really with slightly more game area but no sound effects

Dirk's disks

Dragon's Lair, the coin-op, uses a laser disc, a high-density storage medium akin to a giant compact disc which can hold a large amount of quality images and sound. For accurate translation, a huge amount of data is needed — 130 Megabytes in fact! This has been compressed to fit onto six Amiga disks, but even then, a Megabyte of memory is needed

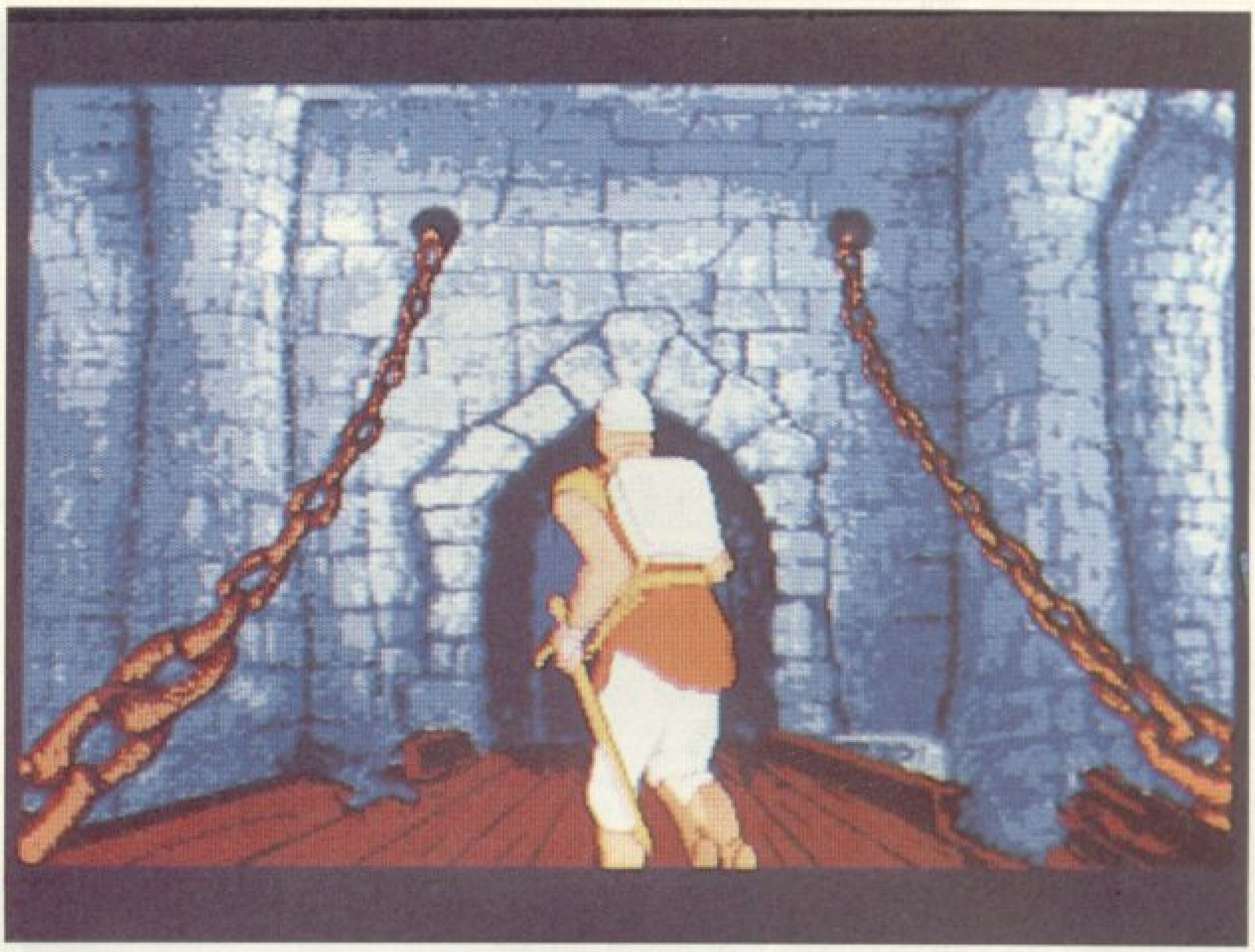
(or 512K for A1000 owners) — and a second drive is helpful.

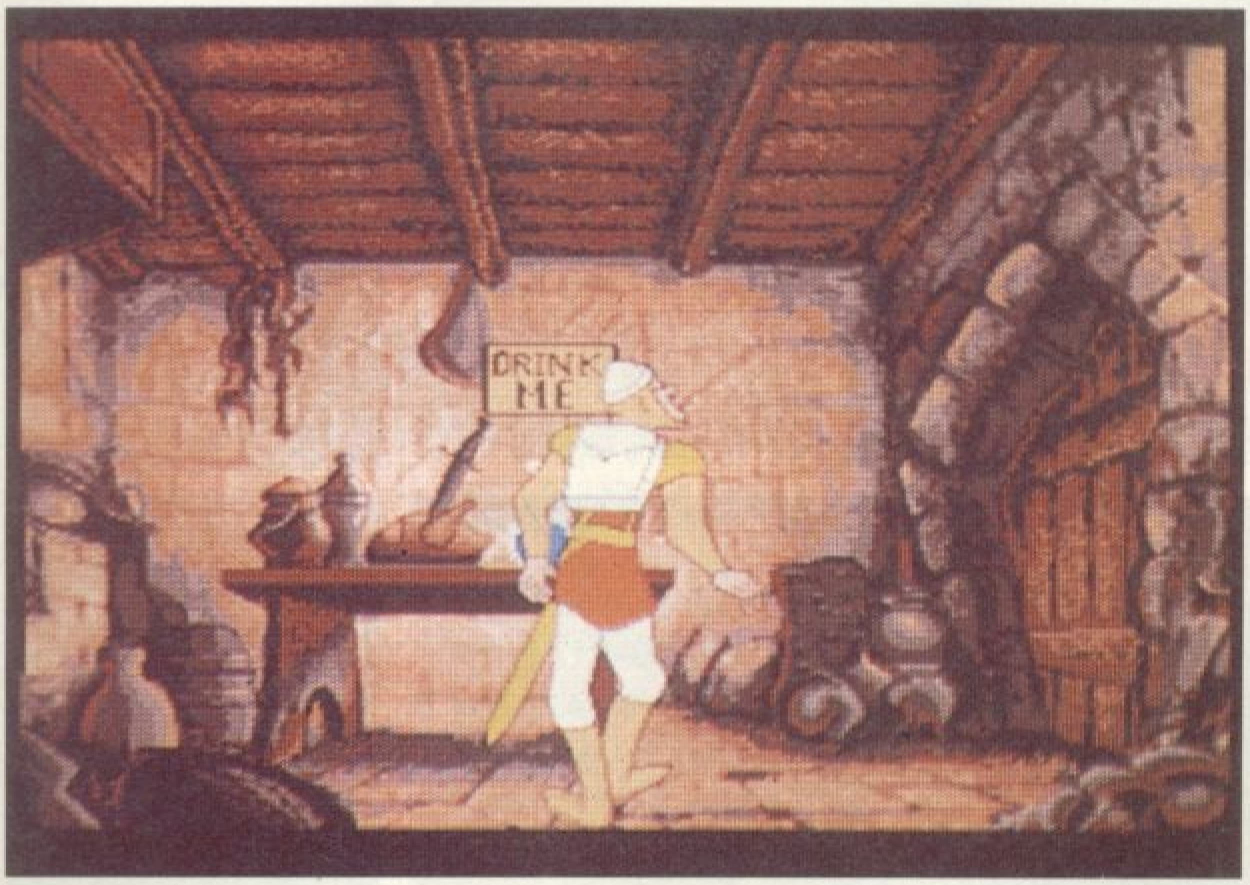
Being essentially an interactive cartoon, joystick moves don't directly mimic what Dirk needs to do, so approximations have to be made. Finding the right move can be a matter of trial and error and, like the coin-op, Dirk doesn't instantly react, so ill-timing a move can lead you to believe the wrong one was made.

Dragon's Lair fans won't find the gameplay a problem and should instantly warm to this conversion, but those unfamiliar with Dirk's joystick may find response frustrating.

With no continue-play facility and only three lives, having to start again after making progress through the disks may have you eating your monitor in frustration. The feeling of satisfaction when a scene is completed is tremendous, however, and makes the effort worthwhile.

Fans of the coin-op and anyone willing to try an original game format will be rewarded with this accurate translation of the compelling cartoon adventure.







***Top:** Dirk's daring deeds seemly are deemed dangerous down in the dastardly dragon's domain. While across in the ...*
***Centre:** Bravley setting forth across the ROTTING TIMBERS (subtle hint) of the drawbridge*
***Left:** Jump for the flashing bits (eh!! eh!!) or you'll fall to your doom... bat's the way it goes — Amiga screens*

AMIGA
£44.95

Considering Journey Into The Lair **costs £120 plus the price of a laser disc player — Amiga owners aren't paying too high a price as both graphics and sound are as close to the original as anyone could reasonably expect. Backgrounds are faithful to the coin-op — brilliant use of colour and shading — and although the moving characters/objects have relatively few colours and are simply outlined in black, they're superbly animated, exactly as they are in the coin-op. There's even a hi-res mode where graphics are condensed into a small area making the game virtually indistinguishable from the original. Jingles and a plethora of realistic sound effects are all sampled, and although there is background hiss, they combine with the visuals to create a magical atmosphere. Impressive.**

OVERALL 81%

OTHER FORMATS

8-bit versions have been around for a while; ST owners will have to spend several hundred pounds on a laser disc system or like PC owners, sulk.

"The feeling of satisfaction when a scene is completed is tremendous"

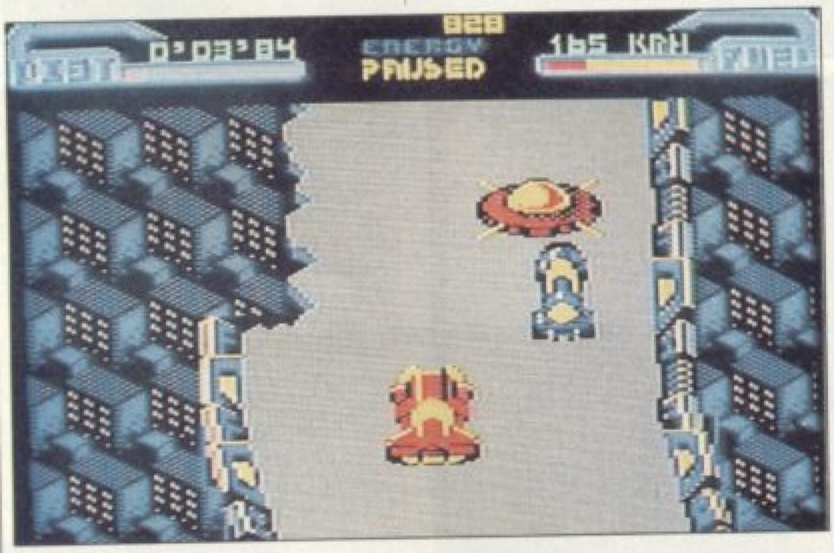
LED-FREE

LED STORM
US Gold

Hitting the accelerator, your LED machine's wheels squeal as you roar away from the starting line in a cloud of burning rubber. In the distant future, car racing is even more thrilling than today's high speed competitions. Ideas and goals remain the same, but circuits are refreshingly futuristic.

Your objective, like many games before it, is to make it through each stage within a time limit. In this case, time takes the form of decreasing energy — topped up by collecting icons en route or from passing tanker vehicles.

All self-respecting LED racers take a pedal-to-the-metal policy in the fight to win. But to complicate matters, cars, motorbikes, juggernauts, oil, grease, chasms and holes in the road pose problems.



Great road-holding, even when wet, or so we've been LED to believe — C64 screen

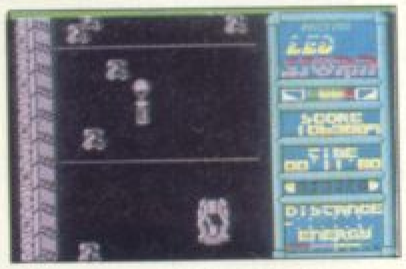
Stormy revver

A normal automobile wouldn't get five yards on some of the courses. Luckily, your Storm 11 racer is state-of-the-art four wheel driving. Along with a phenomenally over-the-top engine throbbing under the bonnet, an awesome hot-rod chassis and a specially strengthened shell, your Storm 11 has the unique ability to turbo-leap over obstacles.

To spoil your aerial fun, mutant frogs hop along looking for cars to hang onto. Shake them off or jump over them, otherwise you're grounded.

As well as a car to be proud of, a K1 navigating computer is fitted onboard. Unfortunately it's practically useless at navigating — it's up to you to keep the car on the freeways and avoid collision in your race to the ninth checkpoint, Sky City.

Software Creations (Bionic Commandos) have created a good, fast-paced race game. And, while lacking variety, the simple nature of LED Storm keeps addiction levels high and instils a strong compulsion to progress.



Monochrome but fun: Spectrum LED Storm

ATARI ST
£19.99

While faster than 8-bit versions, this game is remarkably easy to get into. Sporting good graphic quality and definition, and featuring surreal colours, the screens scroll smoothly. Unfortunately the coin-op's parallax effect has been omitted.

OVERALL 71%

AMIGA
£19.99

Guess what? Yes, another port across from the ST. Good rather than very good graphics reside, with colours restricted to the ST's palette. This makes it look exactly like the ST game complete with push-screen scrolling, luckily gameplay isn't affected to a major degree.

OVERALL 67%

COMMODORE 64/128
Cassette: £9.99,
Diskette: £14.99

Software Creation's trademarks come to light with funky soundtracks and professional presentation. But, surprisingly, scrolling backdrops are graphically basic. It may look slower than the rest but it's by no means easier — thanks to ram-crazy cars and depleting energy levels which leave little margin for error.

OVERALL 74%



Disappointingly similar to the ST but the music is great — and of course it plays very well (spot the award) — Amiga screen

The Games Machine STAR PLAYER

MOTORING

SPECTRUM 48/128
Cassette: £8.99,
Diskette: £12.99

As fast as the ST game but without the colours, Spectrum LED Storm is hectic to play, featuring an extremely nippy car and highly vicious road users. Super-smooth and highly effective parallax scrolling together with great 128K music and sound effects give the game a class touch — though backdrops are generally bland.

OVERALL 76%

OTHER FORMATS

Ride out the storm soon on Amstrad (Cassette £9.99, Diskette £14.99) and PC (£24.99).

"State-of-the-art four wheel driving"



Hectic future racing, who needs it. It's all a Storm in an ST cup

VERSION UPDATE

CASTLEVANIA
Konami

Nintendo £29.95

ORIGINALLY released by Konami for the MSX (under the title *Vampire Killer*), Nintendo — knowing a good game when they see one — have licensed this Drac-busting arcade adventure for their console.

Count Dracula is being a pain in the neck again, sucking blood left, right and centre. The nearby town of Dransylvania has suffered many an attack by the prince of darkness, therefore a hero is chosen to kill the Count. Armed with only a whip, simple Simon arrives at the gates of Drac's pad.

Within the basement, sewers, belfries, graveyard and deep inside Dracula's home lie the many minions slave to the ruler of the undead.

To help Simon battle through, weapons and special objects are available to find and use — 15 in all, with a variety of powers and effects on the mansion's inhabitants. Many enemies require more than just a taste of the whip to send them packing.

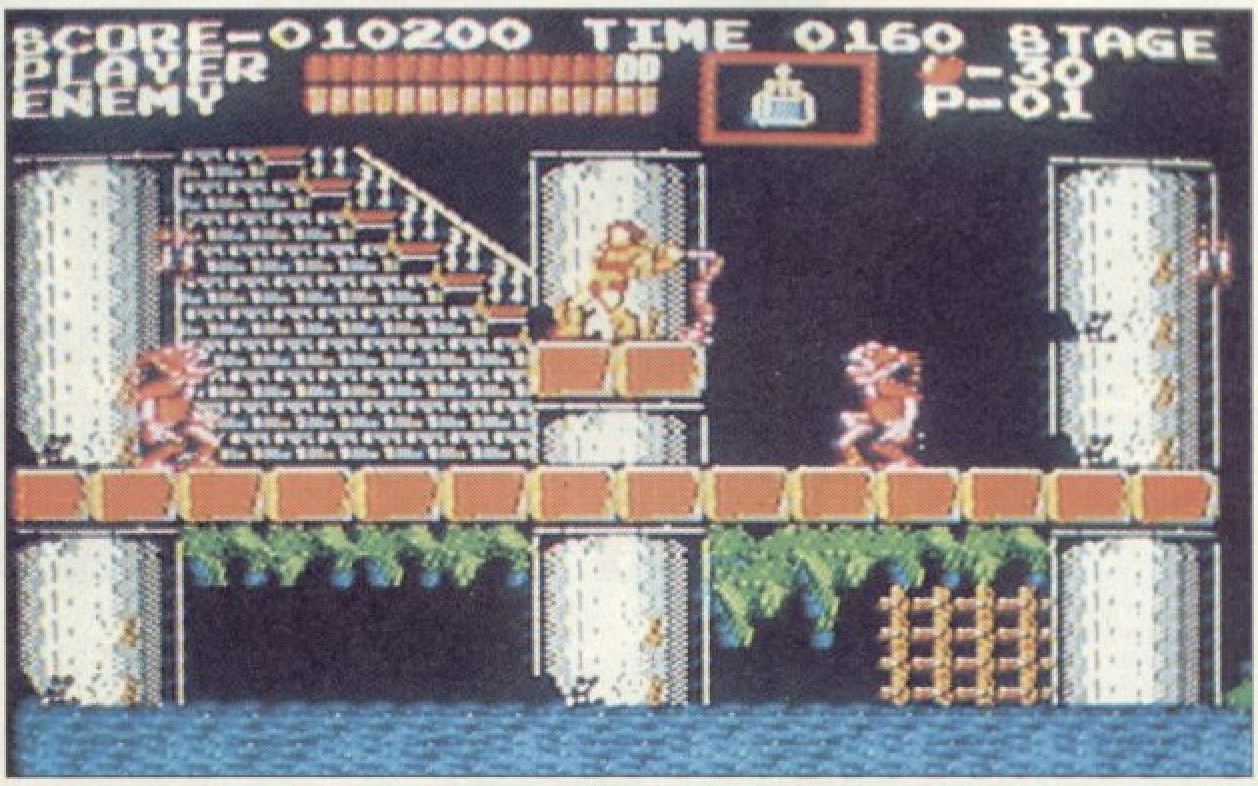
An energy level for each life, rather than straightforward death-on-contact, gives you a whipping chance, and adds to playability.

Castlevania is more arcade orientated than the MSX version, keys are no longer needed and there are short-term objectives to reaching the next level. Unfortunately, infinite continue-plays are too generous, making progression easier than it should be.

Graphically, *Castlevania* is among the best Nintendo games, featuring constantly changing backdrops and many highly detailed sprites. Sonically, it is a real treat: music captures the mood of each level, getting ever more spooky as you near the tomb of Dracula.

OVERALL 71%
MSX: TGM002 69%

Ghost-busting monster-bashing action a la MSX Vampire Killer



VERSION UPDATE

OPERATION WOLF
Ocean

AMIGA: £24.95
ATARI ST: £19.95

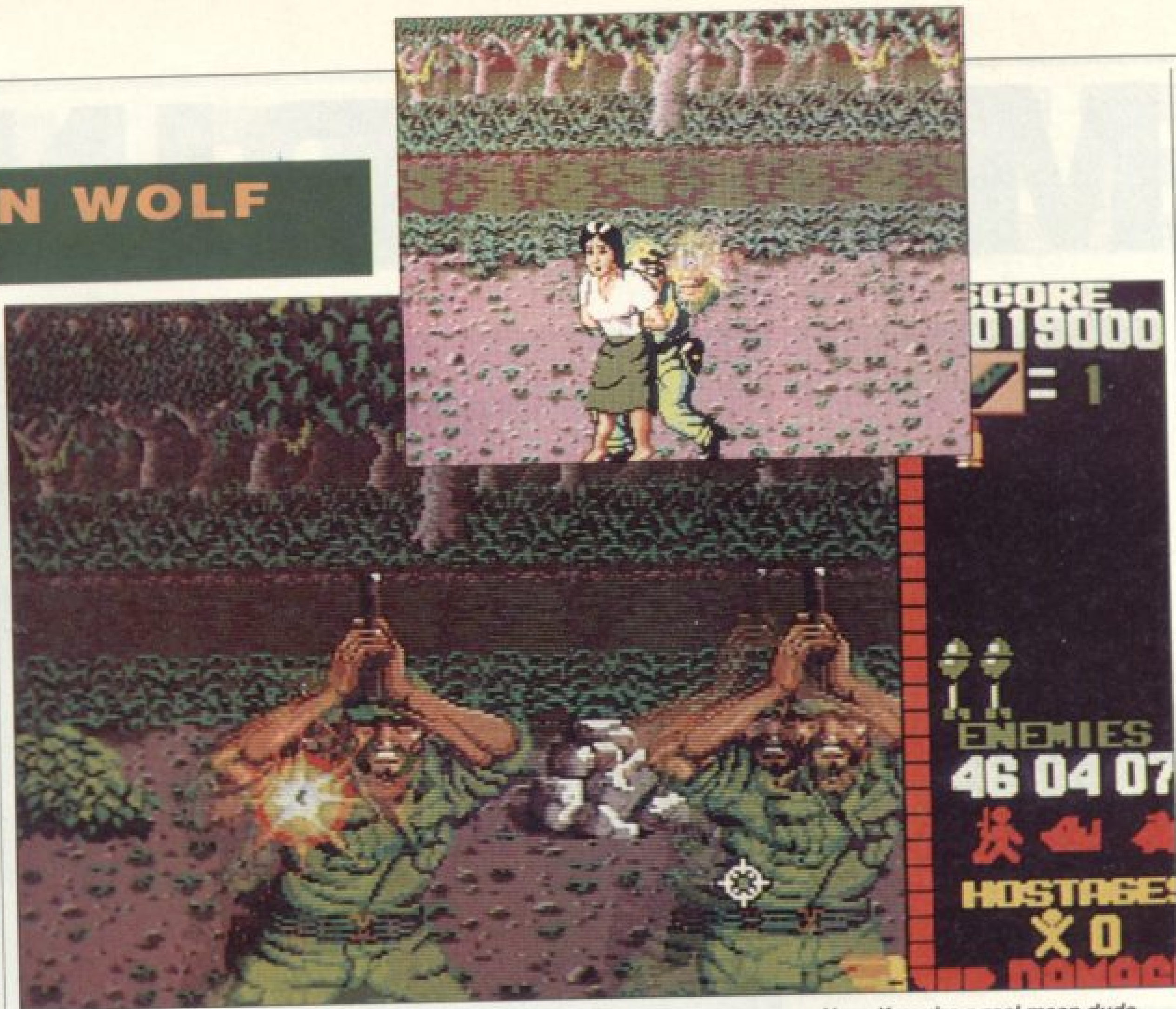
THE eagerly awaited conversion of *Operation Wolf*, the smash Taito coin-op, to 16-bit promises everything — have Ocean delivered?

Boasting graphics ported more or less intact from the coin-op, the two versions are visually identical, displaying detailed backdrops and excellent between-stage screens.

The ST falls down with middling musical pieces, quiet but clear sampled speech and weak in-game sound effects. On the other hand the Amiga provides loud speech, beefed up explosions and solid music based around excellent use of kettle drums.

In play, the Amiga is faster but very difficult — soldiers and bullets move so quickly your chances of survival are slim. This renders the game mildly frustrating — but is in keeping with the coin-op.

The ST version's slightly slower (but just as smooth) horizontally-scrolling stages give you a little more time to think and keep the situation under control, allowing steady progression. This makes play a shade easy, resulting in a lack of long-term appeal. The constant disk swapping gets tedious too.



Take a look, have a blast and enjoy it, but don't expect it to be the best thing yet.

AMIGA OVERALL 82%

ATARI ST OVERALL 77%

SPECTRUM: TGM013 87%

AMSTRAD CPC: TGM013 89%

C64: TGM013 79%

Now, if you're a real mean dude you could accidently-on-purpose shoot the hostage by mistake (inset top above on the ST). The Camouflage Combat formation dance team put on a demonstration for you — Amiga screen

VERSION UPDATE

R-TYPE
Electric Dreams

COMMODORE 64/128
Cassette: £9.99,
Diskette: £14.99

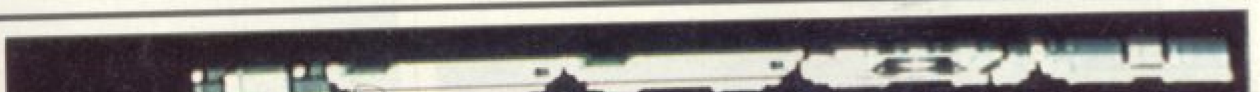
THE Irem coin-op, *R-Type*, is enjoying a new lease of life thanks to superb conversions to Spectrum and ST (see last issue). Rainbow Arts — the people with a finger in the Katakis pie — are responsible for the C64 conversion.

From a technical point of view, *R-Type* is a horizontally scrolling Nemesis clone, improving on the concept with the addition of an upgradeable *R-Type* drone.

Sprites are small and hence lose definition, but colour is limited to shades which create subtle, attractive levels — not in the Armalyte class though.

Of worthy note is the fading in and out of background graphics as your R9 enters the alien fortress on level one.

Of less-than-worthy note is the horrendous cassette loading system. Even failing to complete level one is rewarded with having to reload the level again.



This eliminates long term appeal.

Playable fare certainly, but, aside from its name, there's not a lot in *R-Type* to make it stand out from the crowd.

OVERALL 65%

ATARI ST: TGM016 82%

SPECTRUM: TGM016 90%

It may have all the ingredients of a mega shoot-'em-up, but they don't quite gel. It's not a bad blast though



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has many things
going for it . . . I reckon
it will be the definitive racing
conversion for 8-bit machines."
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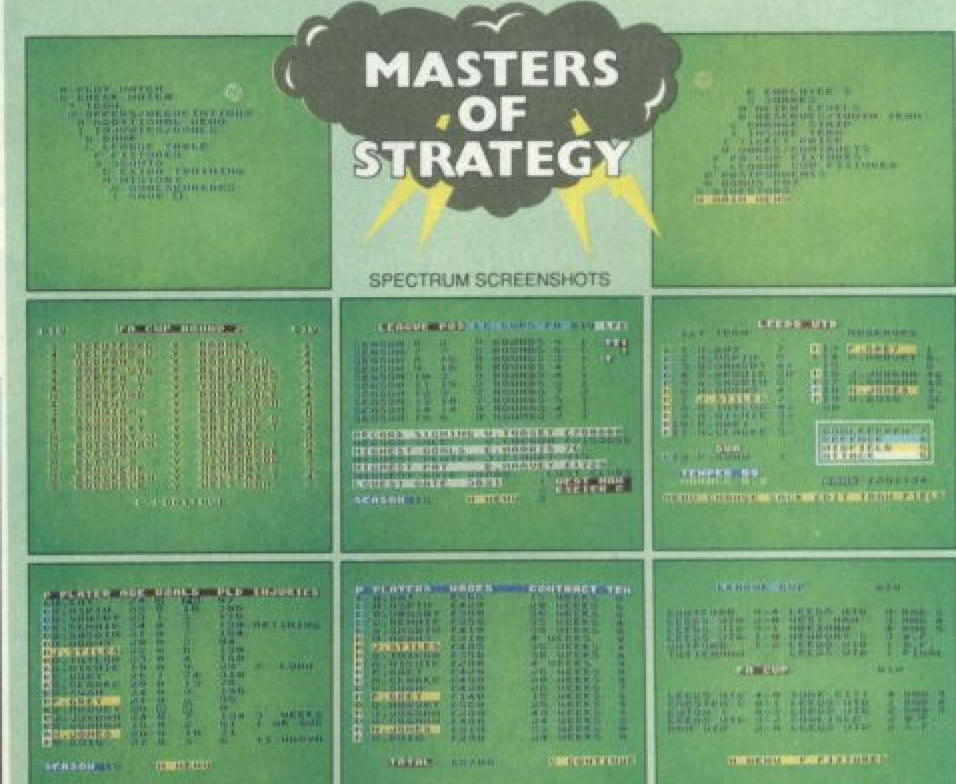
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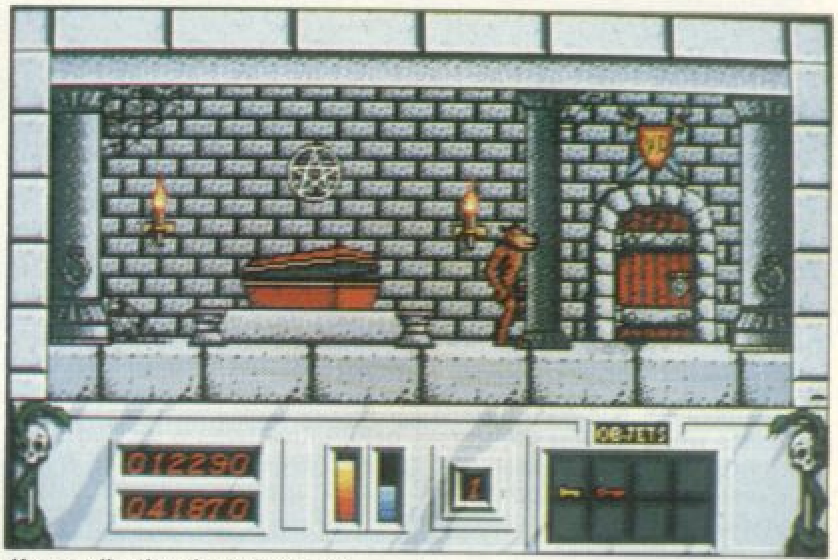
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A HELSING HAND

NIGHT HUNTER
UBI Soft

What's the most popular subject matter for computer games? *Space aliens.* Apart from aliens? *Sport.* OK. Apart from sport and aliens, what might be the most popular? Think of horror. *Not gribbly?* No, something undead. *Have they done a computer version of Hearts Of Gold then?* Think teeth. *I was!* Forget it! Since the dawn of computer games, Dracula has been one of the most popular subject matters for software. Oh.



Keep collecting those keys and you'll be finished in necks to no time

Holy medallions have helped keep Count Dracula and his nefarious necksploits under control. But oh how the prince of darkness thirsts! He plans to steal the medallions, create a bit of chaos and eventually rule the world. A vein hope?

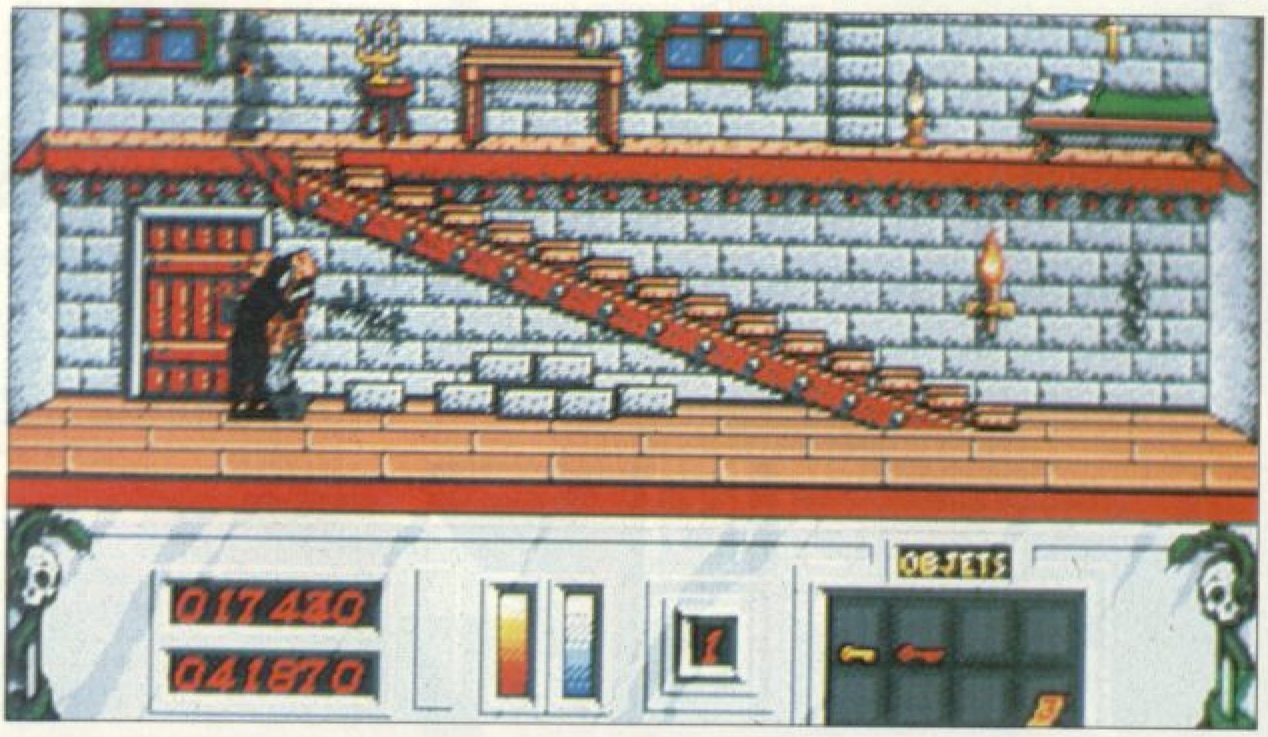
Professor Van Helsing hears of Dracs plans and forms an army of what the packaging calls 'anti-vampire-fighters'. This could spell disaster for Van Helsing as everybody would be fighting him, 'cause he's definitely anti-vampire. Luckily the army he creates is actually made up of vampire fighters — otherwise the prof would be in a grave situation — they set traps for Drac and inform the population of their doings.

Now for the twist... You play Dracula! But this must be the French revamped version, as the count is able to not only turn into a bat but also a werewolf (bet they can't keep him at bay!). This comes in handy for crossing water and duffing up Van Helsing's army on your quest to find the medallions. Drac himself is no pushover, when his power gets low, a slick press of the fire-button and any human close enough gets grabbed by the throat and sucked dry, to suitably slobbering sound effects.

Corpse blimey

It doesn't all go Dracula's way though, the army consists of men armed with bows and arrows (Drac himself is into a bit of artery), holy water, axes and fists. There are also flying green witches who cackle as they launch magic attacks on Drac (giving him a green witch mean time). Luckily there are no dwarfs in the game, Drac is hell when he's been on the shorts. On later levels the count faces ladies with crosses to bear, birds of prey and armed policemen. But the deadliest adversary of all is the prof. He turns up at the end of each level, one of his stakes and our anti-hero is turned to dust — he should try the local diner.

Consisting of 30 levels, the aim is to proceed and eventually succeed (or suck blood) by finding and collecting five keys and three parchments in each. A code-word system prevents you having to start new games from level one.



All the guy up-top can do is stand and stair as his friend is sucked dry

Basically an arcade adventure, *Night Hunter* stands out from the rest due to its brilliant sound effects, well animated characters and suitably spooky backdrops. The only drawback is Dracula's slow response. Standing there taking arrow after after arrow is not the way to win, but the bloody vampire just won't crouch down until he's taken about three through that cold heart of his. Very frustrating, especially when Van Helsing serves up his deadly stakes.

OTHER FORMATS

You can soon get your teeth into versions for the Amiga, PC (£19.99), C64, Spectrum and Amstrad (Diskette £14,99)

ATARI ST
£19.99

Interesting but repetitive music paves the way for some great in-game effects —particularly the blood-sucking sound as Drac quenches his thirst. Animation of all characters is brilliant and the count's transformation sequence is very tidy. Door keys are difficult to spot in places but the pause mode allows closer scrutiny of each screen (or should that be scream?). UBI Soft have been quiet for some time, Night Hunter heralds their welcome re-awakening to the land of the semi-living.

OVERALL 81%

"Brilliant sound effects, well animated characters and suitably spooky backdrops"

Nothing to disturb the still of the night but the sound of suckin' 'n' coffin



PRESS ANY KEY

MARSHAL ARTS

WANTED
Infogrames

Ever fancied yourself as a rootin', tootin', son-of-a-gun whose job it is to clean up a wild west town which ain't big enough for the both of us? Like to mimic John Wayne's drawl and the menacing whisper of the man with no name? Then look no further than Infogrames' latest release, pardner!

There must be something about Arkansas which attracts the worst sort of people. In 1880, there are four real mean dudes up to no good, and their boss is even tougher. Not only this, but lots of bad guys have joined them to make sure they win the west and bag all the loot.

Luckily, you're the roughest, toughest, sharpest-shooting bounty hunter who ever cocked a six-shooter — and the people of Arkansas have put a prices on the gang's heads that you simply can't resist. Donning your biggest non-metric hat and spurs that jingle jangle jingle, you set out to retire the bad men to Boot Hill.

A mighty fine shootin' iron

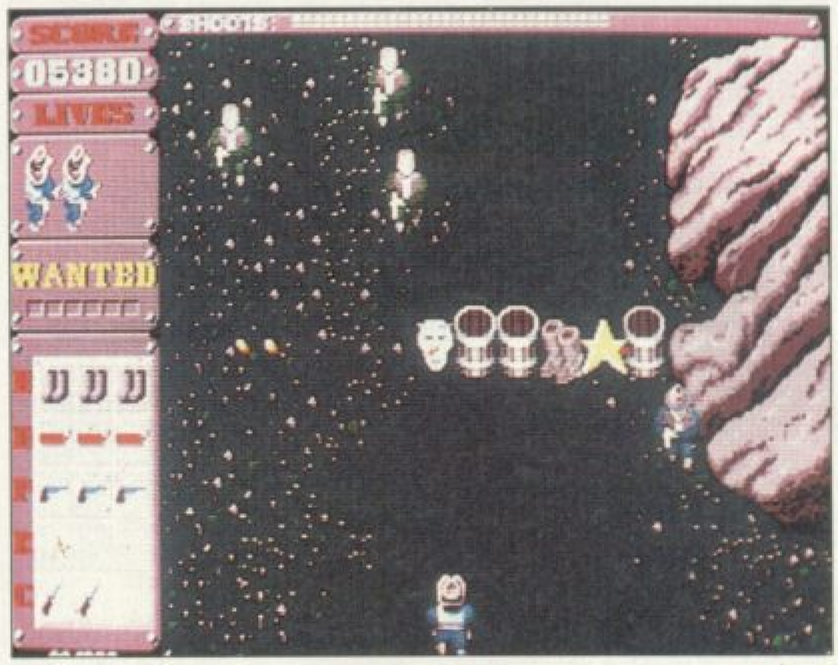
Before the shoot-out begins, you choose your target from a group of four wanted posters. Bounty ranges from $5,000 to 20,000 determining the bad guy's toughness and the level's difficulty. All end-of-level outlaws must be put out of action before their boss is tackled.

An aerial view of your pistol-packing pixel pardner is shown in vertically-scrolling scenes and feature various bad guys running towards you or taking cover — but mostly spraying bullets in your direction. Luckily, you're armed with a pair of pretty bizarre pistols which fire in three directions at once — you lose this multiple power with lives (you begin with three).

Throwing dynamite has a smart bomb effect, wiping out all enemies on screen, but you only have three sticks to begin with. As with gun firepower and ammunition reserves, dynamite is gained by picking up an appropriate icon, revealed by shooting barrels. Also available are boots to help you mosey faster, rifles for long range firepower, and a sheriff's star to speed up the level. Hearts symbolise an extra life, a money bag gives bonus points, and a shield makes you invincible for a limited time. Add-on icons are lost with each life, and six are taken if you pick up a skull.

Wanted has the *Commando* label stamped firmly on it. Multi-direction weapons and speed-ups have been added to the simple shoot-and-run action but gameplay remains limited.

However, the mindless shoot-'em-up fare is undeniably fun (if difficult) for a limited period.

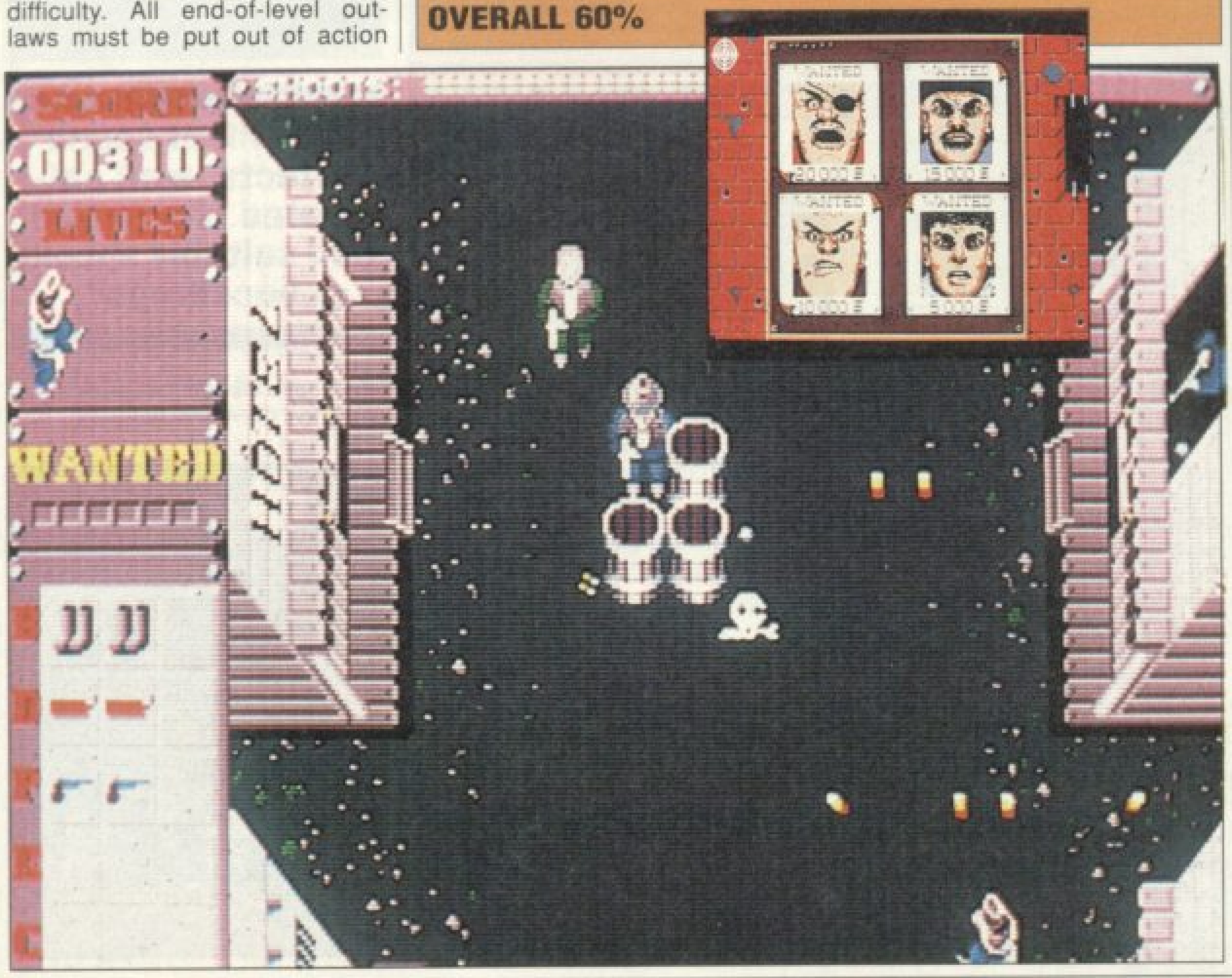


The man with no name has got the outlaws over a barrel — if he reaches the icons in time

AMIGA £19.95

A comical theme tune precedes the game, complete with horse hooves, banjo and cowboy chorus. Game graphics are a disappointment: wanted portraits are crude, sprites lack believable detail and are feebly animated. The only skillfully-fashioned graphic is the hat on your sprite's head! Sampled gunsounds and silly screams — some bad guys' sound like sheep as they turn into skeletal corpses — are the only in-game audio.

OVERALL 60%



ATARI ST £19.95

Other than minor points of definition and colouration, the ST version looks, and indeed plays, similarly to the Amiga. Sound effects are replaced with beeps which lose the game its atmosphere, and the title tune is less complex.

OVERALL 58%

This town ain't big enough for the both of us. Your pistol-packing pixel partner fights his way to the top of the screen and the bossman.
Inset: the four pesky varmints who have to be sent to Boot Hill before the gang leader can be tackled

OTHER FORMATS
None planned

"Simple shoot-and-run action"

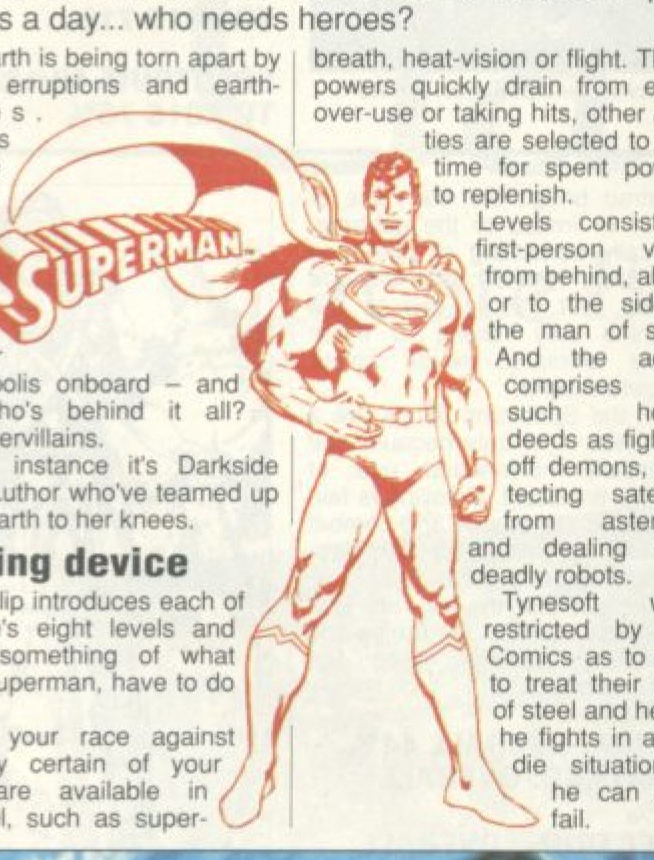
A TIGHTS SITUATION

SUPERMAN: THE MAN OF STEEL
Tynesoft

Before we had superheroes to save our puny world from domination or destruction by supervillains, there weren't actually any supervillains around to worry about. If heroes hadn't come along, perhaps the supervillain would never have surfaced? If so, it's Superman and his buddies' fault that the world is in peril 24 hours a day... who needs heroes?

Today, Earth is being torn apart by volcanic erruptions and earthquakes. Terrorists have hijacked a yacht with Lois Lane and the govenor of Metropolis onboard – and guess who's behind it all? Yeah, supervillains.

In this instance it's Darkside and Lex Luthor who've teamed up to bring Earth to her knees.



Cloaking device

A comic clip introduces each of the game's eight levels and explains something of what you, as Superman, have to do in them.

During your race against time, only certain of your powers are available in each level, such as super-breath, heat-vision or flight. These powers quickly drain from either over-use or taking hits, other abilities are selected to give time for spent powers to replenish.

Levels consist of first-person views from behind, above or to the side of the man of steel. And the action comprises of such heroic deeds as fighting off demons, protecting satelites from asteroids and dealing with deadly robots.

Tynesoft were restricted by DC Comics as to how to treat their man of steel and hence he fights in a no-die situation – he can only fail.



Superman protects the space shuttle from hurtling asteroids — C64 screen

ATARI ST £24.95

A slightly warbly rendition of the theme from Superman The Movie **heralds what is visually a very attractive game. Control can be sticky in places but the slick animation and artwork used, more than make up for it. The scene where Superman sorrowfully walks his fortress of solitude after losing the battle is particularly atmospheric (you get to see this section a lot). What does ruin the game is the fact that you are sent right back to the start of level one every time you fail. This ruins the incentive to get anywhere and thus the will to play. Tynesoft would have an excellent game on their hands were it not for this stupid idiosyncrasy.**

OVERALL 43%



ST screenshot

OTHER FORMATS

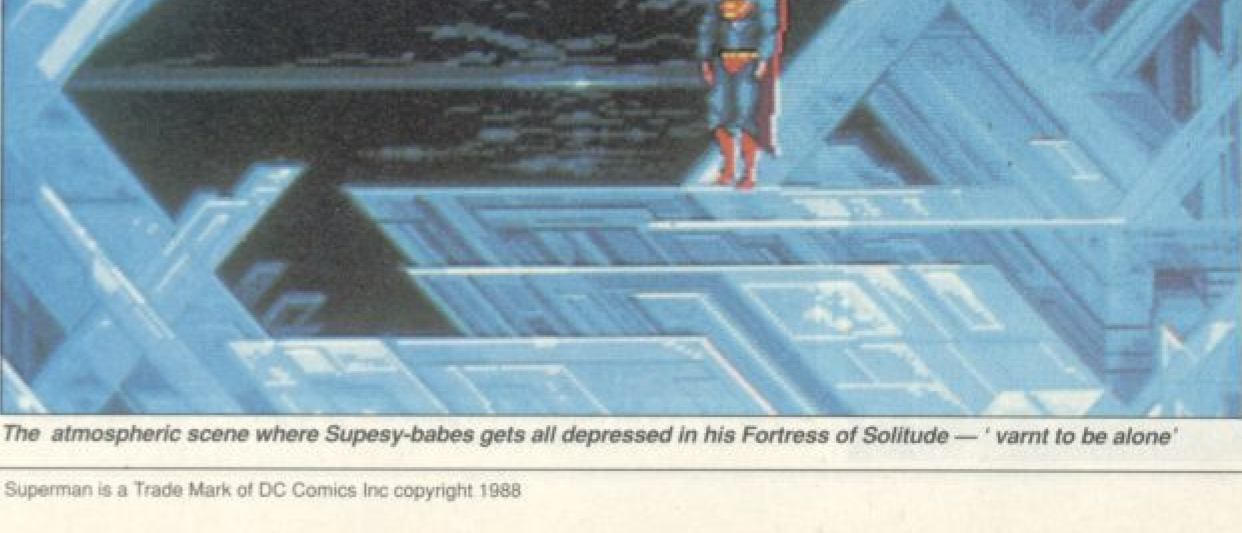
The red, yellow and blue avenger should be making a quick change to Amiga, PC (£24.95) Amstrad (cassette £9.95, diskette £14.95) and Spectrum (cassette £7.95, diskette £14.95) as you read this.

COMMODORE 64/128
Cassette: £9.95
Diskette: £14.95

The theme music is good... but that's about all. Although the little Superman sprite is quite nicely drawn/animated and you have a choice of three skill levels, the fact that he doesn't die makes the game ridiculously easy. I finished it by sitting back and letting the thing run on its own — the congratulatory screens are quite nice though. The only incentive to play is to get a good score — the fun is taken out of the game by having, to all intents and purposes, infinite lives. For Superman to fail (as in the ST game) on cassette versions would mean lots of frustrating tape rewinding and reloading.

OVERALL 38%

"He fights in a no-die situation"



The atmospheric scene where Supesy-babes gets all depressed in his Fortress of Solitude — ' varnt to be alone'

PRESS ANY KEY

VERSION UPDATE

BATMAN
OCEAN

Atari ST: £19.95

POWER to the Bat-monitor, engage Bat-disk in Bat-computer and utilise Bat-joystick for Ocean's Caped Crusader conversion.

Batman is split into two independent parts (the game, not the hero), both involving a supervillain endangering Gotham City.

Part one sets the Dark Knight against the Penguin who's creating robots from the central computer in his mansion. The trickier part two features Robin kidnapped by the Joker and bombs planted beneath the Bat-cave.

Both are played in a similar manner (the Wayne manner?). Henchmen and various rogue devices are tackled with fighting moves, often at the cost of energy. Objects are picked up, dropped or used in the course of solving the arcade adventures.



Sophisticated multiple windows, planty of kicking and punches, but no killing — **Batman** *on the ST*

Supplied on two disks, the remix of the TV programme's music drones on (but with amusing Austrian slap-dancing percussion) from the title screen. Occasional ineffective sound effects are an option.

The large, detailed Batman sprite walks menacingly, but always gapes stupidly when facing you (wonder why), and his punches are poorly animated. Other characters and backgrounds are colourful and well-drawn. Bad guys remain annoyingly damaging.

A game better suited to 8-bits but still worthy of some hours head-scratching and joystick-thrashing on the ST.

ATARI ST: OVERALL 72%

COMMODORE 64/128: TGM015 71%

SPECTRUM 48/128: TGM015 76%

VERSION UPDATE

HEROES OF THE LANCE
US Gold

Amiga: £24.99
Amstrad CPC, Spectrum 48/128: Cassette £9.99, Diskette £14.99

SIX heroes of the lance enter the ruined city of Xak Tsaroth to locate the fabled Disks of Mishakal, with which they hope to rid Krynn of demon dragons. Taking the form of a multi-character combat game with exploration overtones, Heroes Of The Lance was created to cover the action side of the classic RPG.

Amiga Heroes is a straight-forward conversion which has made no effort to improve the lurching scrolling, poor sound or slow animation of its predecessor. Technically, the game takes a significant step backwards.

That's the good news! The Amstrad brings the bad: use of colour is limited to the extreme, basically consisting of pink and grey (very Habitat). Game-speed is fast, but this is due to the machine only having to move poorly animated single colour midgets around.



'Eat honed blade, Draconian scum!!' — one of Tanis's crowd gets a bit over-excited — Amiga screen

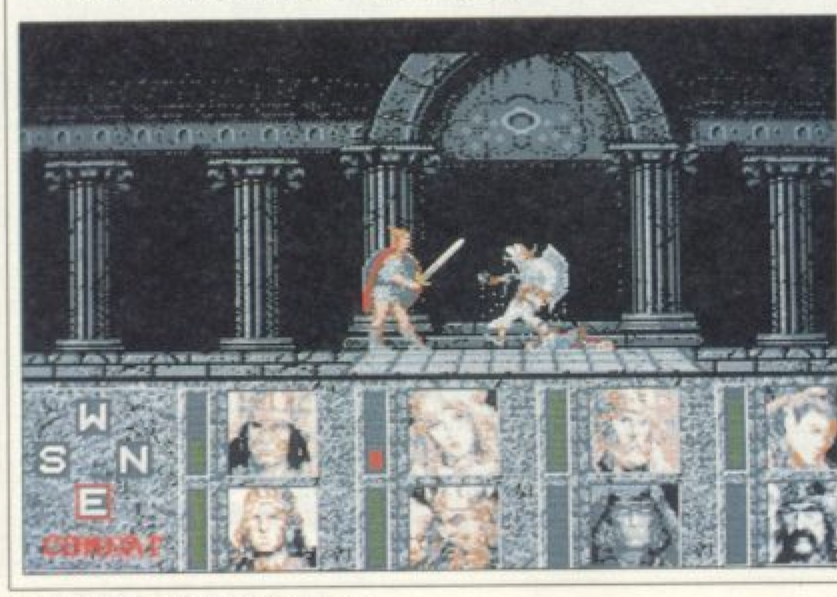
On the Spectrum, things are a little better _ if only because the potentially horrendous use of colours is absent. Scrolling is fair, animation forgettable and combat amounts to two matchsticks feebly tapping one another.

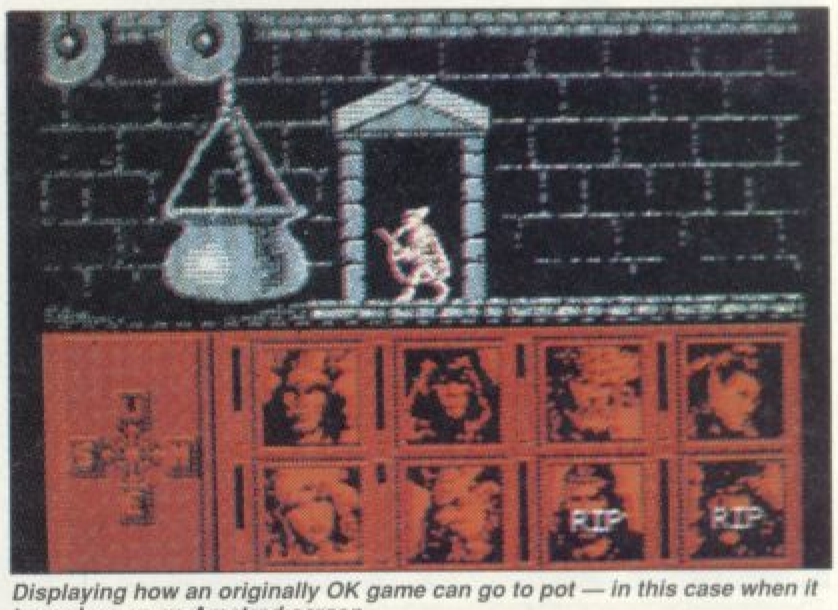
The fact that there's very little difference between the Amiga and Spectrum versions loses the game its credibility.

AMIGA: OVERALL 44%
AMSTRAD: OVERALL 30%
SPECTRUM: OVERALL 38%

ATARI ST: TGM012 78%







Displaying how an originally OK game can go to pot — in this case when it turned up on an Amstrad screen

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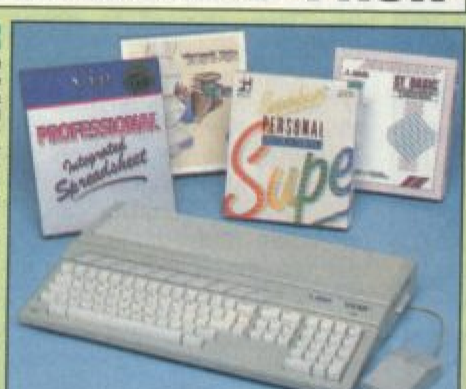
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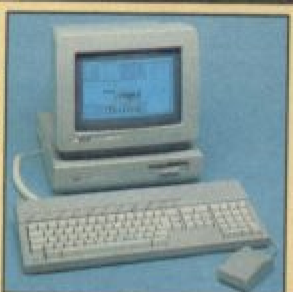
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KORT BY THE MULTIPLES

PHANTOM FIGHTER

Martech

Curiosity killed the cat, so they say. This could be the case for the people of Farronzark, though their ventures into the galaxy were generally fueled by desperation — the common problem of overpopulation forcing colony ships out to search for new homes. One such target, the planet Kortran, was hospitable yet unnervingly familiar; the elders likened it to Farronzark in its early stages of civilisation.

Indigenous lifeforms (Korts), knowing when they weren't wanted, took to hiding in the arid Badlands of the planet. A colony ship was sent out to destroy them but failed to return.

This is where you enter the story. With an elder, MacMixDune, as a crewmate, you pilot a ship to the Badlands and witness a startling sight: a fleet of ships, craft from all over the star system and even from different times. The fleet speed past you and destroy your colony.

MacMixDune tells you of the early years of Farronzark. The people were superstitious and went into the wilderness when they felt their death was near, to purify their souls by killing evil there. Mac was the only person ever to return, and he saw the same fleet as was hiding in the Kortran Badlands.

Bury elders

He is now dead, but you are the Phantom Fighter, destined to destroy the strange fleet and free the souls of all elders slain by them. To do this, your ship is armed with an upgradable laser to blast waves of aliens.



You can look at this pretty picture while your waiting for battle to commence — Amiga screen

To help you, particularly against the big 'n' nasty end of level guardians, some destroyed waves leave icons behind to enhance your ship's powers.

Slick shoot-'em-ups are few and far between on 16-bit machines, *Phantom Fighter* is a welcome release to help fill the gap. Fast, attractive alien flight formations and smooth scrolling are the precedent and *Phantom Fighter* features these along with sharp control response and good graphics. Switching scrolling directions deepens the Amiga game, and, though the PC only scrolls vertically, it retains depth with its additional weapons, such as Friends, Defenders, and Whacks(?!).

Phantom Fighter is a difficult but playable arcade game which well deserves a place in your software collection.



AMIGA £24.99

The graphics are not quite arcade quality but are certainly well drawn, with sprites moving rapidly across effective, animated backdrops. Your ship is a very cumbersome looking vehicle but deals out some heavy damage. And it needs to, as aliens adapt their attack patterns to home in on you. Music and sound effects are disappointing but are not detrimental to the hectic gameplay.

OVERALL 78%

Pilot the Flying Bathtub (as it's affectionately known) through the Caverns of Despair (above). Dazzling PC shoot-'em-up action across the barren wastes of the Badlands (below) — Kort in the act?



PC £24.99

Supporting EGA, the status areas facia is quite realistic and, like most sprites, is attractively shaded. Graphics are crude in places, but on the whole, show the PC's capabilities. With a bouncing screen effect and 11 types of weaponry, Phantom Fighter has features which make it the best shoot-'em-up on the PC to date.

OVERALL 80%

OTHER FORMATS

None planned

"Fast, attractive alien flight formations and smooth scrolling"

LAST STAND

CUSTODIAN
Hewson

If you hear anyone describe Hewson's latest game as 'ancient' or 'dead', don't think they're being critical of the multi-direction shoot-'em-up: it's set within a tomb. A tomb of the future, on another world, where gleaming metal and sophisticated electronic devices make up the chambers. The dead and the decorated facades are defended by... The Custodian.

As a squat synthetic brain and weapons module on legs, you've had a pretty easy time of it taking care of your designated tomb. Nothing but yourself and the quiet hum of machinery to keep you company.

Now things are far from peaceful. Aliens have invaded, intent on stealing energy and minerals with which to fuel themselves, and they're not likely to be scared off by a single Custodian robot. They've already planted Pods, which even now are draining the tomb's power source.

Guiding the robot both on foot and in jet-pack flight, your main aim is to collect the Pods before they drain all the tomb's energy. The thiefing aliens try to prevent you from doing this, being hit by them or their missiles reduces your own energy. To rebel, you begin with a full compliment of 99 ejectable turrets — short-lived, automatic hovering guns.

Your robot has multi-weapon capabilities which are taken advantage of with credits — these double as a scoring system.

To your credit

You're awarded 1000 credits when you begin the game and approximately 24 for each alien destroyed. The ten types of weapons available cost between one and 500 credits and include Ramcon 10mm rocket shells, Trident vertical rockets, diagonal laser beams, and Megaclear smart bombs.

To help you travel quickly around the tomb, there are teleport devices, which , although costing 100 credits to use, give back energy points.

Hewson appear to be in the market of stealing ideas from their own games, as *Custodian* has quickly recognisable similarities with *Cybernoid* and its sequel. Your sprite is controlled in the same manner (Cybernoid, the ship, didn't have legs but moved smoothly over horizontal surfaces as the Custodian robot does) and you have a finite supply of weaponry, only one type may be used at once.

The credits and ammunition system works well — particularly as you can gather a small arsenal right at the start. X15 homing missiles are particularly brilliant, defending your robot and gathering credits while leaving you to concentrate on other matters.

Areas of the tomb are largely undistinctive, but this is the price you pay for having a large scrolling play area rather than the restrictive screen-by-screen technique of *Cybernoid*.

While certainly playable and a quality shoot-'em-up arcade adventure, *Custodian* doesn't have the appeal of the aging classic and so is destined for short-lived attention.



'Today's special offers; 3 credits off Ramcon 10mm rockets and two Megaclear smart bombs for the price of one' — ST screen

Zoom around the tomb or soon it will meet its doom — Amiga screen



AMIGA
£19.99

Custodian has the general appearance of a graphically polished C64 shoot-'em-up. Detailed sprites, outlined in black, and bold colour schemes give the game a lively appearance. Animation is smooth and the music sounds like a remix of Speedball; sound effects also bring on feelings of deja vu.

OVERALL 70%

ATARI ST
£19.99

Similar to the Amiga version except in the sound department, where the ST's simple audio facilities do their best without resorting to sampling.

OVERALL 70%

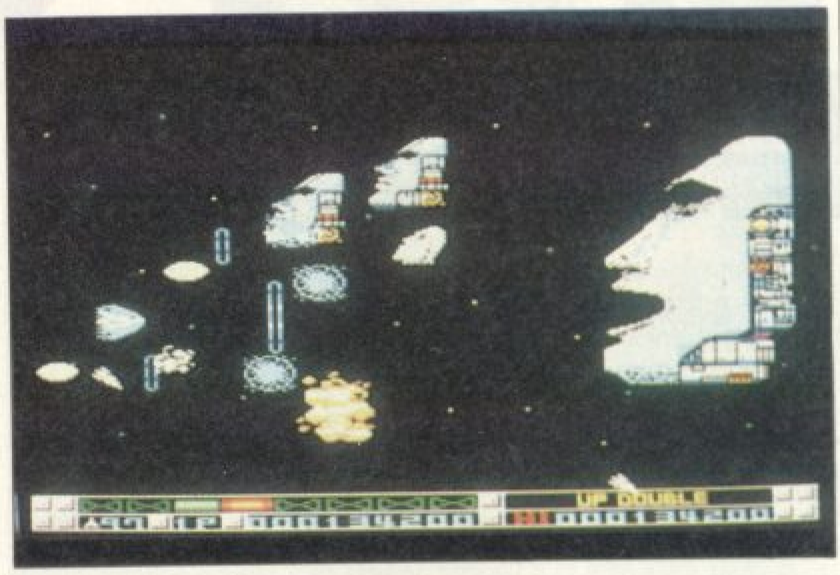
OTHER FORMATS

8-bit formats are planned for the second half of the year.

"The credits and ammunition system works well"

GONE FOR A BURTON

Easter already? Monolith upon monolith spews out from the huge robotic... er, monolith



NEMESIS III: THE EVE OF DESTRUCTION

Konami

Nearly 200 years after the Salamander wars the artificial intelligence computer Gaudi picked up time and spacial disturbances. The Bacterions, it seemed, have travelled to another time to cause havoc.

Tracing their path and possible objective, Gaudi learned that the Bacterions had gone back two centuries — their plan is to kill James Burton, star of previous *Nemesis* battles, before he was born and hence negate all resistance to their evil plans.

Unbeknown to the Bacterions, James fathered many sons, among them David — an ace pilot with the same high ESP rating as daddy. With fire in his heart, David strapped himself to his Vixen fighter to take on the Bacterions, go back in time to rescue dad and jump back to the present day for the final conflict.

At the start, any one of four classes of Vixen is chosen to fly into combat. Each has its own type of arsenal to build up on.

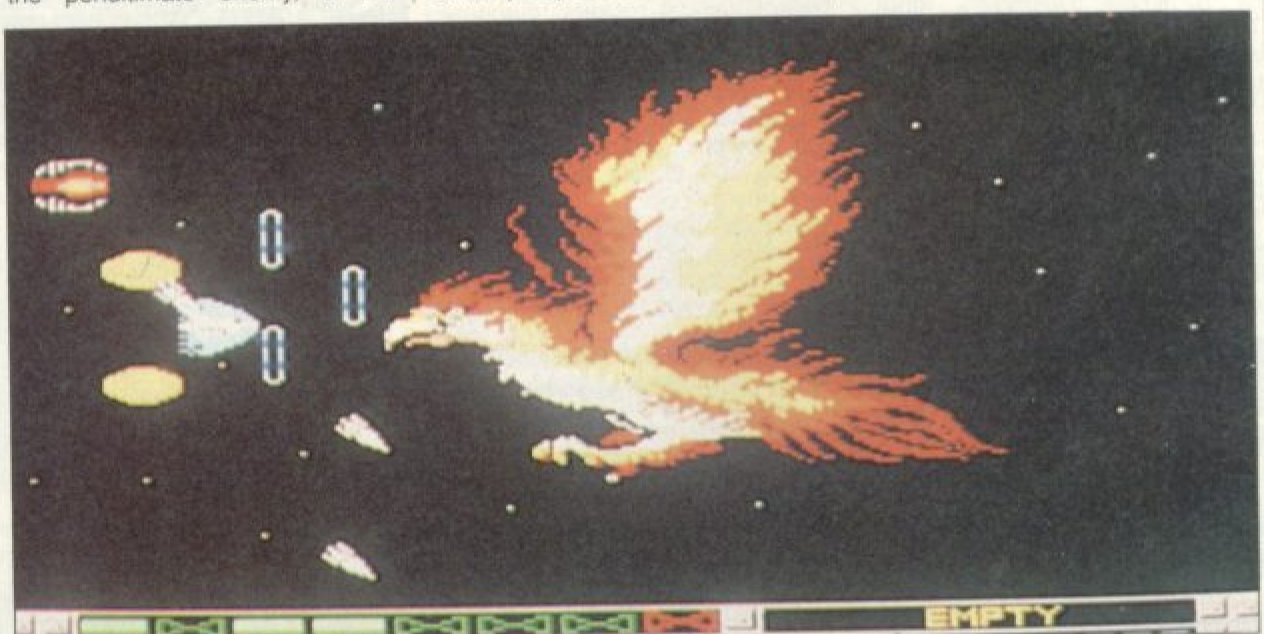
Hunt the salamander

Though *Nemesis III* is not the official conversion of *Vulcan Venture* the first level is lifted straight from the coin-op. Stages include black holes that suck your Vixen all over the place — another is set in a *Salamander*-style flame planet. The most entertaining though, is level 4 in which you are taken back in time through *Nemesis II*, *Salamander* AND *Nemesis*, facing all the old enemies along the way!

Nemesis III is the biggest game in the series so far. Everything is on a truly massive scale from the front end (with its five minute aural and visual introductory sequence) through the stages and onto the astonishingly ferocious end-level adversaries. Sights to see and destroy include a fiery phoenix, an enormous Easter Island head and the penultimate enemy, a full-screen-in-height skeletal robot.

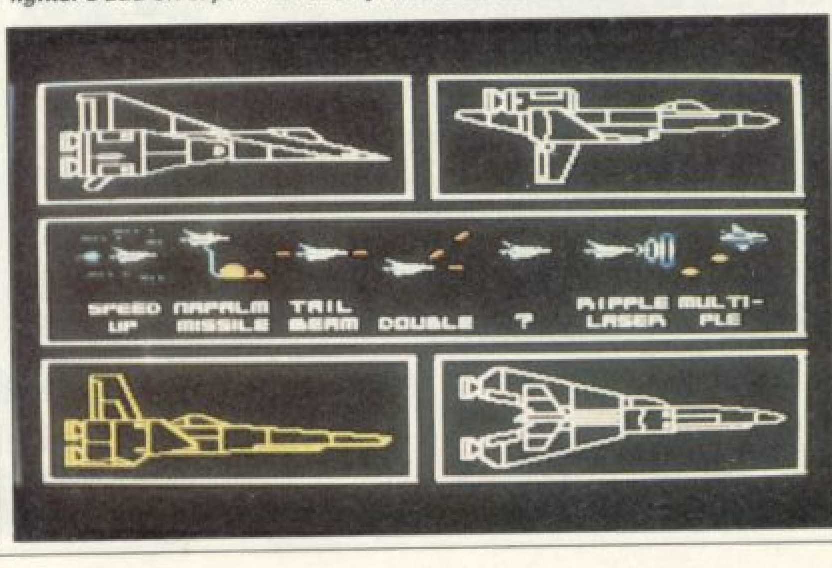
While the difficulty level of *Nemesis III* has been tweaked in favour of the player, overall difficulty remains high, as hidden weapons and maps need to be found. Failing to do so takes you back into the fray — an unwelcome prospect even when armed to the teeth.

With presentation, atmosphere and features to parallel coin-op quality, *Nemesis III* is the best of the series yet. While lacking the entertaining dual-player option of *Salamander*, *Nemesis III* is the best shoot-'em-up yet to grace the MSX screen.



Fielding from the right, an awesome fiery Phoenix attempts to set your world on fire

The menu screen at the game's beginning which allows you to select your fighter's add-on capabilities ready for the various battles ahead



KONAMI SOFTWARE CLUB

The Konami Software Club newsletter has undergone change and is now quarterly and at the new price of £8.00. The magazine has been expanded to 24 pages and covers not only Konami titles across MSX and Nintendo formats but also conversions of Konami coin-ops by software houses like Ocean. The address for the Konami Software Club is *Sherwood House, 22 Courtnay Park, Newton Abbot, TQ12 2HB.*

MSX-I/II
2 Mega-bit Cartridge: Price to be announced.

As ever the scrolling is pretty dire and in places graphic presentation isn't always perfect (a crude black square appears when the giant flower on level two explodes, for example). The former problem is not noticeable due to the tough demands of saving dad and the latter becomes a minor fault when you consider the amount of game you're getting.

OVERALL 86%

"The biggest game in the series so far"

I'LL TAKE MANHATTAN

MANHUNTER — NEW YORK
Sierra On-Line

Though previous Sierra games have been reviewed as adventures, *Manhunter — New York* is their first release to rely almost totally on a mouse driven environment. Indeed upon seeing minimal presence of text input and arcade sections (shock!) Rob Steel immediately handed it down to us lesser mortals on the review team.

Life is hard in the Big Apple — particularly if it's in the year 2004 — humans no longer control their own lives — the Orbs have seen to that.

Two years ago they landed on Earth. Far from arriving with outstretched tentacles, they invaded and swiftly enslaved the population. The Orbs implanted tracking disks in humans and gave them the 'freedom' of the Manhattan Island area.

Fortunately the disks were faulty and not only lost their signal when underground, but also failed to identify the wearer.

To keep track of possible subversive elements, the Orbs chose selected humans to become Manhunters, and equipped them with MAD (Manhunter Assignment Devices) tracking computers. It's their task to track down suspects and report their activities to the Orbs.

Today, humanity is well and truly under alien rule. And you are a Manhunter. One particularly gloomy morning an Orb entering your beat-up flat.

It orders you to investigate a mystery explosion at Bellevue Hospital. Any findings are to be reported back — and the Orbs don't take no for an answer, time to go to work.

Your MAD

At the start of each investigation you consult your MAD computer to track the suspects. The MAD follows them around Manhattan using a plan view to show their movements.

Each location they visit is noted and you are advised to go there yourself using a handy teleport facility.

Each location is totally graphical in representation, clues are searched for using the mouse. Finding them is easy, even if they're hidden from view. Moving the cursor around the screen reveals anything worthy of a closer look.

Clues are satisfyingly cryptic, and in many ways the game unfolds like a futuristic detective movie as you piece together each investigation. Any names or identities uncovered can be checked up on via your MAD's INFO facility.

In keeping with previous Sierra games there are animated scenes for most actions, all quite humorously carried out, but some include gruesome sequences when things go wrong. A Save/Restore function along with a friendly continue-play option are present for long term and risky play.

Arcade-action sections are tricky but simple and ultimately unnecessary.

Do you really want to play? The 'Halls, Walls, Balls, Dolls!!' (sic) coin-op in the Flat Bush bar (wishful thinking for American democrats?)

OTHER FORMATS

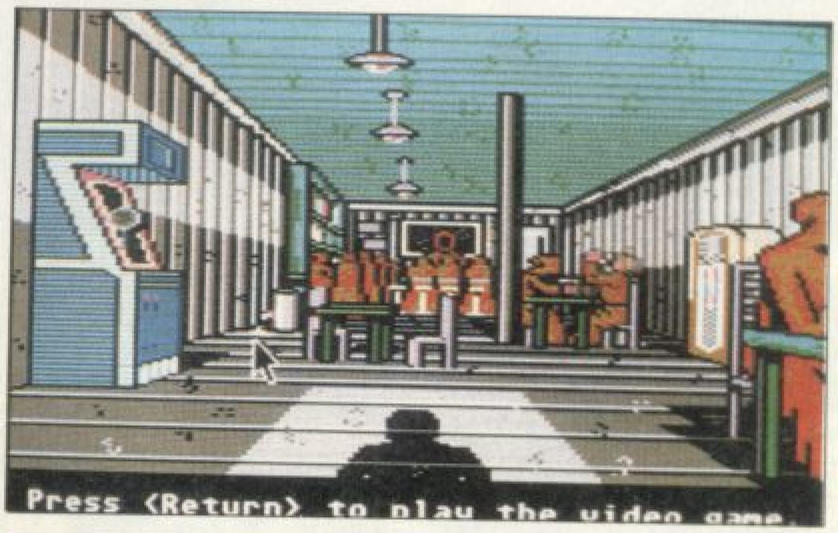
Believe it or not the PC version (£34.99) comes on 13 disks! An Amiga version is planned for March — price to be confirmed. Perhaps the PC game will be bigger — with 13 disks to juggle with it should be!).

ATARI ST
£29.99

It won't win any prizes for graphics but it does create a realistic, if simplistic, atmosphere of a run down, oppressed metropolis. That it's spread across five disks belies the limited nature of the game.

OVERALL 67%

Those of you who thrive on Agatha-Christie-style game plots with clues and puzzles aplenty should appreciate *Manhunter — New York*. Problems are tough and independent investigations are cleverly intertwined to form an involved 'adventure'. Unfortunately, there are no false trails to give more depth and, while varied, there aren't that many locations — Less than twenty at the last count. A questionable departure from the norm for Sierra, but enjoyable to play.



"Problems are tough and independent investigations are cleverly intertwined"

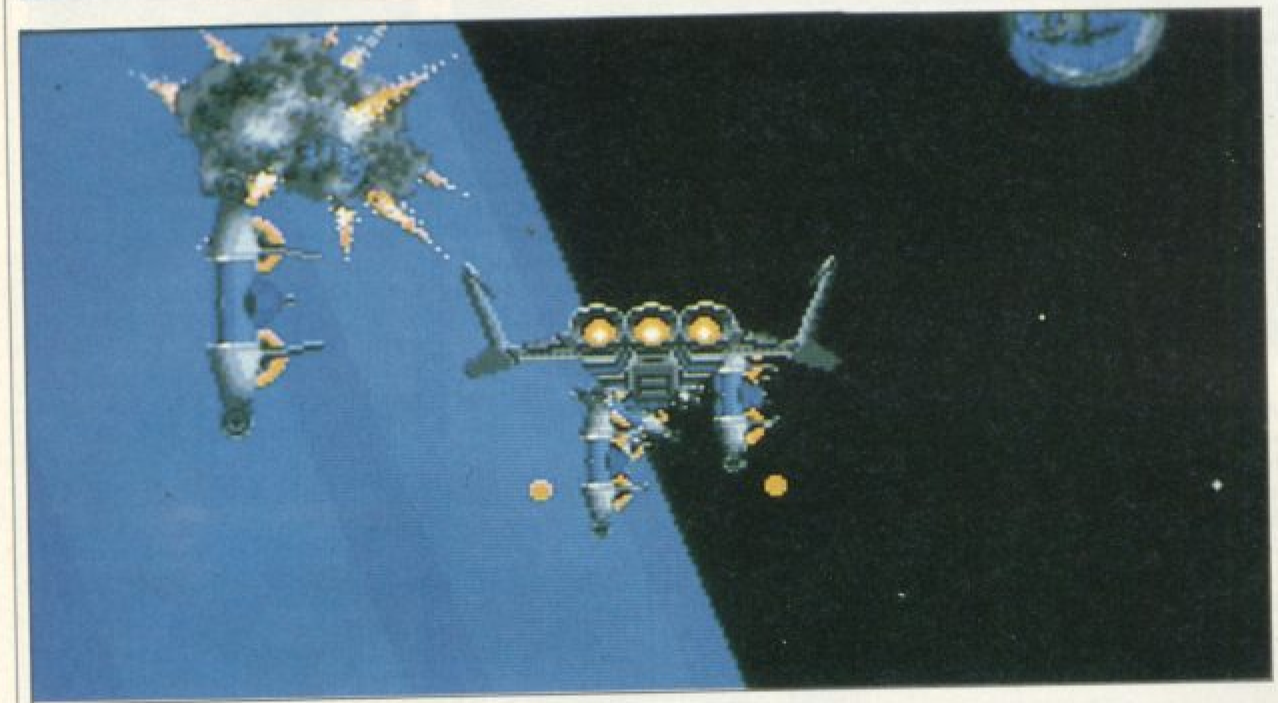


Brotherly love may be one thing, but in 2004AD it proves that you must've lived the life of a monk to think Bros's music is good

PEACE OFF

GALACTIC CONQUEROR

Titus



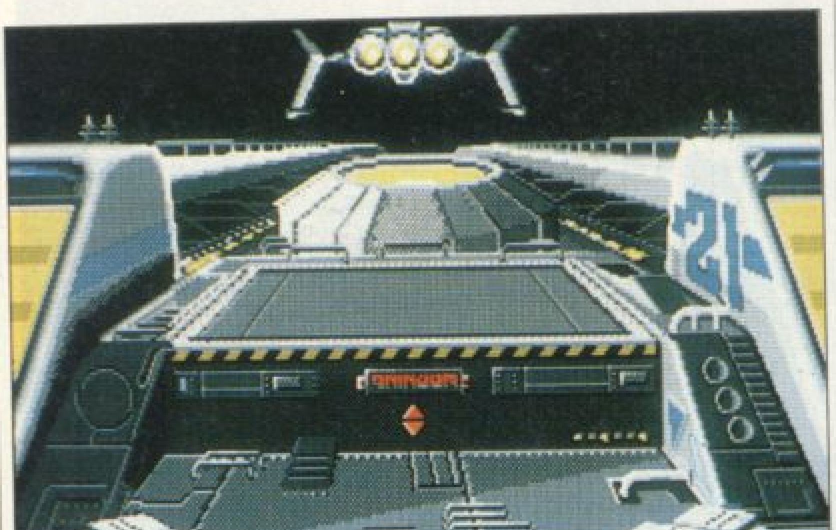
Afterburner-style action, banking crazily ('Gimme a Vector account, yeah!!') and admiring the nice stripey planet — Amiga screen

By the mid-21st Century, peace on Earth became a reality, people went about their lives happily — most of them that is. Some found it all too boring, particularly the strict peace-keeping force, who, tired of living in Yawnsville, rebel in an effort to take control of the planet. Galactic dog-fights followed and the Stellar League was created to protect the interplanetary military base, Gallion.

The war between the League and the rebels is in deadlock, neither side gaining advantage, but now Thunder Cloud II, a galactic fighter, is ready. Its firepower is 10,000 times greater than that of the original Thunder Cloud (featured in Titus's Fire And Forget), plus it has a negative ionization ultrasensorial protection shield (and a verbose creator).

There's only problem: no-one's skilled enough to pilot it. Eventually however, you, being the latest champion of the Off Shore battle (fought in Off Shore Warrior), are chosen. Only you can restore peaceful order to the galaxy.

After a short practise flight, you're presented with a map of the local system, with Gallion and its four moons in the centre. Enemy planets are shown as red circles and ally planets as blue. Strategic decisions are made as to which enemy planets you should attempt to purify. Factors affecting strategy are the safety of Gallion and its satellites, surveillance moons, and individual ally planets.



Ha, fueled you! Thunder Cloud II is now restored to its former glory — ST screen

You world saver you

Once a world is chosen, a mothership releases Thunder Cloud II into the atmosphere and the first phase of attack is launched. Mines, probe-robots, missiles and meteorites wizz by in 3-D as you skim the planet's surface at full speed. Dodging left and right — vertical movement is restricted in this stage — wing-tip lasers destroy enemies while your shield gradually wastes away.

There is no lives system, but when your ship explodes, the planet remains in the hands of the enemy, enabling them to capture more worlds.

Phase two takes place at a higher altitude, allowing you to bank violently or even fly upside down as you take on missiles, meteorites and, most importantly, the enemy fighter fleet.

For the last section, the battle continues out in space, where, as well as asteroids and enemy craft, you deal with Imperial Enemy Ship.

Successful or otherwise, planets are tackled until the enemy captures Gallion.

Galactic Conqueror has a very high standard of presentation, from the huge mothership which releases your ship, to the information which overlays the galaxy map, but unfortunately gameplay is repetitive. The fast Afterburner-style action is fun but planets are very similar to each other and interest soon wanes.



Atmospheric sound and graphics combine beautifully on the interstellar map screen (well on the Amiga, as seen above, they do)

ATARI ST
£19.99

Lack of colours in the mothership is partially compensated for by shading, but generally graphics are a little weaker than the Amiga — the horizon is slightly jerkier as it banks. Sound effects are sometimes simplistic — where the Amiga samples are used, there is only background hiss.

OVERALL 62%

AMIGA
£24.99

The game impresses as soon as the detailed mother ship scrolls into view. And the fast, smooth-tilting horizon of the shoot-'em-up action which follows is equally good, despite some dubious perspective. The galactic map section is excellent — very atmospheric visually and aurally — but there just isn't enough gameplay in Galactic Conqueror.

OVERALL 63%

OTHER FORMATS

PC (£24.99) and Amstrad (cassette £9.99, diskette £14.99) available as we go to press; C64 and Spectrum versions to be released later in the year (at Amstrad price).

"Wing-tip lasers destroy enemies while your shield gradually wastes away"

HOLY SHEETA!

LAST DUEL
US Gold

Last Duel concerns duality in that it involves the tribulations of twin planets, Mu and Bacula. Being of a like nature, it seemed rational for them to join forces against all things hostile in the galaxy. This they did quite happily for decades. In the end, though, greed got in the way, as it often does, and imitation, intentional or otherwise, became not the sincerest form of flattery.

Bacula had devoted more funds to weaponry. Her Galden tribe invaded Mu and captured the lovely Princess Sheeta. She is being held somewhere in the tribe's new complex, and must be rescued to preserve the morale and future of Mu's people. Two heroic warriors have been found to control Mu's most advanced assault vehicles — a three-wheel car capable of leaping into the air and a space plane, both armed with rocket launchers — to fight their way to her.

Last Duel is designed to be a two-player game, but a lone fighter can be a real hero by tackling the Galden tribe single handed.

There are six levels to get through, each full of potholes, gun emplacements and enemy craft. On even levels each player controls a space plane, on odd, player one guides a car and player two a plane. Both increase their firepower by collecting 'P' symbols. And they need to to defeat the huge end-of-level guardian, whether it be an animated dinosaur skeleton, metal spider or, the ultimate behemoth, a mechanical crab monster.

The sprites of life

Extra enemy sprites are added for the flying player two to destroy, and it is quite easy to accidently try to tackle aircraft when controlling the car, or land features when piloting the space plane.

In the coin-op market, particularly the huge shoot-'em-up field, only big (or at least medium-sized) names are worth converting, unless the coin-op is something special that most people have overlooked.

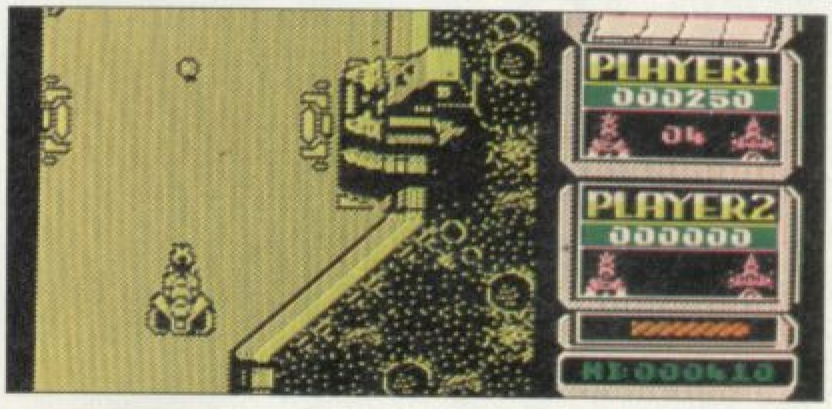
Unfortunately, *Last Duel* is a bog-standard two-player game with little interest added by the two vehicles and leaping car — shades of *LED Storm* here, with level three being particularly inspired from the racing game.

Duel is nothing amazing but worth looking at if driving shoot-'em-ups are your thing.

AMSTRAD CPC
Cassette: £9.99, Diskette: £14.99

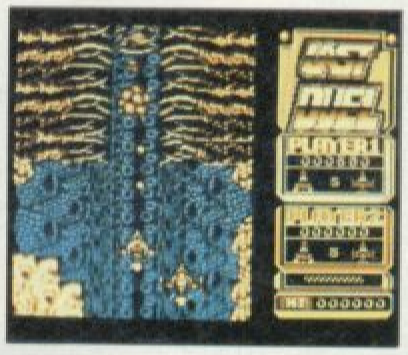
A sickly yellow and orange status panel lies to the right, and sprites feature bold outlines around eye-stinging colours. This is made worse by juddery scrolling. Sound effects are annoying warbles and bleeps. Control response is sluggish.

OVERALL 55%



The oft-confusing collection of black-on-colour objects spoil Spectrum Last Duel

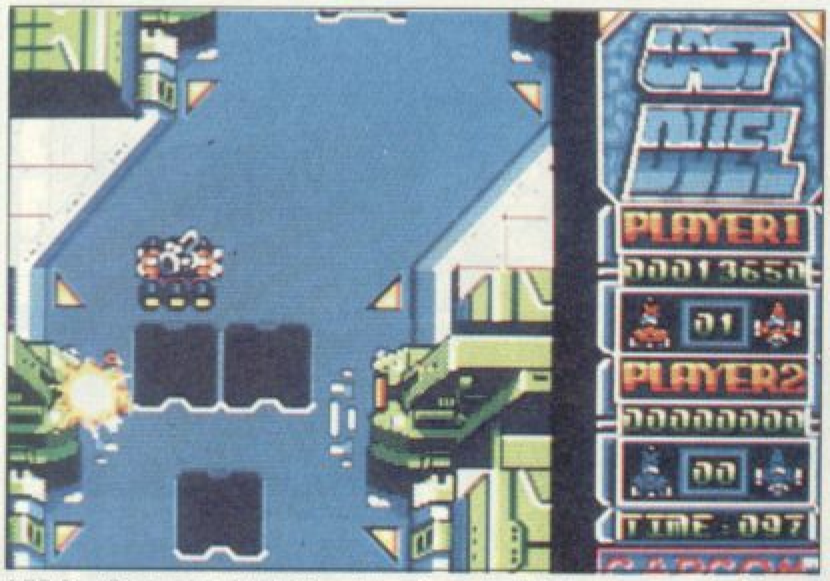
t's double trouble flying through level two — beware the giant bat



AMIGA £19.99

This is a neat game, with colourful compact sprites moving over a smoothly scrolling (vertically — the occasional sideways movement is very jerky) unobtrusive background. Colours slowly change on the extreme sides or centre of a scene, a pleasant if unspectacular effect. Amongst the standard samples are some nice metallic thuds and tones, they match the sometimes grim but generally soothing theme tune.

OVERALL 70%



LED St... Sorry, **Last Duel** *offers lots of speedy hole-leaping, car-dodging fun — ST screen*

SPECTRUM Cassette: £8.99, Diskette: £12.99

Vehicles are clearly drawn but, with the detail in the background and ground features, things get confused in a mass of monochrome, particularly in a two-player game. Scrolling judders slightly but is swift at top speed; it needs to be so that you can avoid the annoyingly devious craft that creep up behind you.

OVERALL 63%



Two of the terrible dragon trio show their ugly mugs in this scene from the end of stage one — Amiga screen

ATARI ST
£19.99

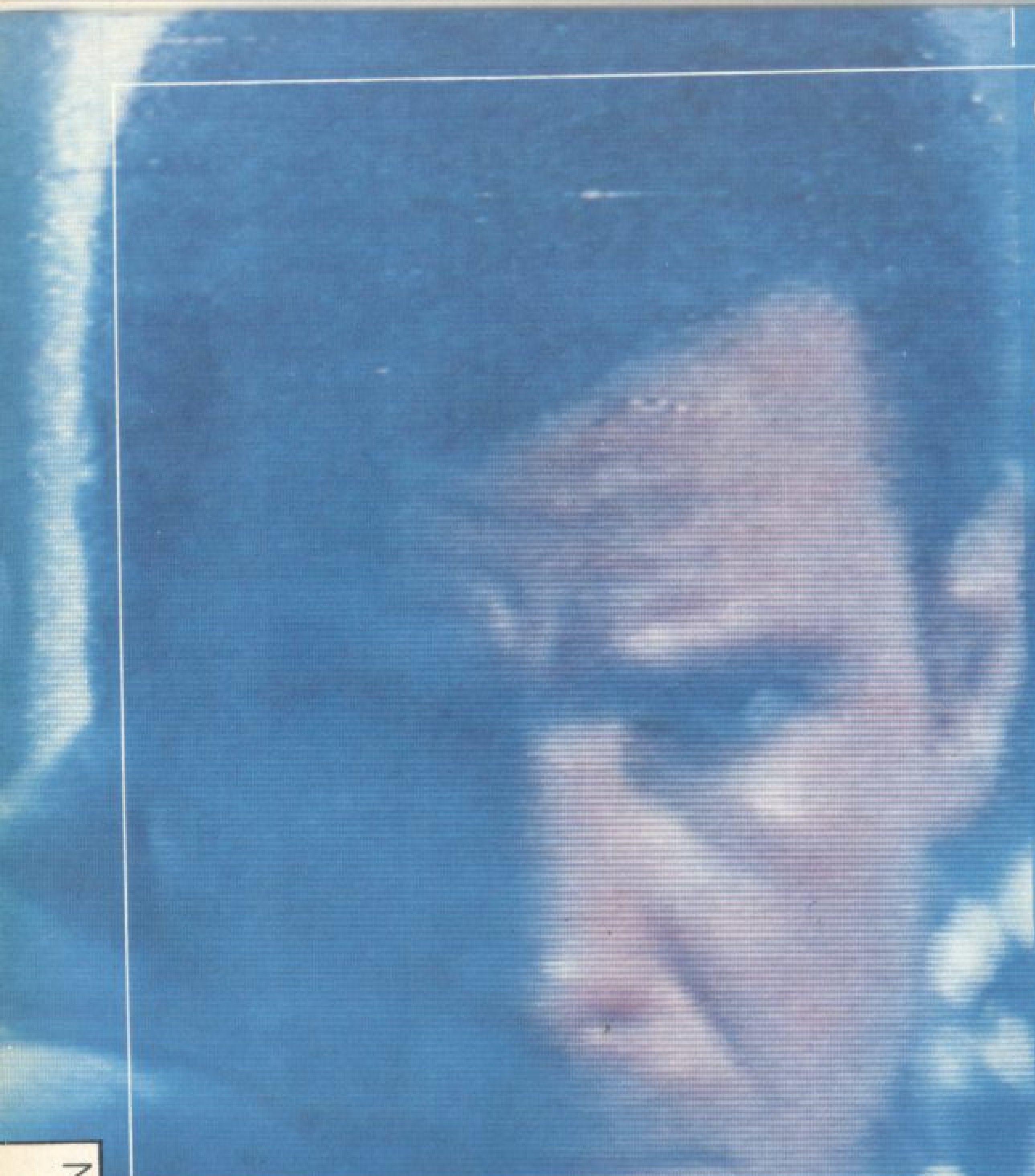
Though it looks a lot like the Amiga version (player sprites are slimmer), it's unnervingly faster, making an already tricky game difficult. This could be an irritant, but it doesn't ruin Last Duel.

OVERALL 65%

OTHER FORMATS

C64 (cassette £9.99, diskette £14.99) out now.

"A bog-standard two-player game"



GET THOSE FUTURISTIC BLUES

WITH ELECTRONIC ARTS AND INTERPLAY

●WIN the book, the game and videos!

The time: the future – far, and yet frighteningly close. The place: Chiba city, Japan, a lawless conurbation where the underground seethes with a trade in human bodies. The mystery: missing persons. The solution: hidden in cyberspace.

Neuromancer, the latest role-playing adventure from **Electronic Arts/Interplay**, is an atmospheric adaptation of William Gibson's cyberpunk classic. We gave the C64 version 81% in TGM**015**, talked to the programmers in TGM**011** and reviewed the book in TGM**011** – and with all that to whet your appetite, it's time to enter the *Neuromancer* comp and win **signed copies of the book and game**.

The first set of correct answers picked out of cyberspace wins copies of the book and game signed by the author and programmers, plus **four cyberpunk videos** (see box headed Video Visions).

Ten runners-up receive signed copies of the book (published by Panther) and game.

Entries should be sent on a postcard, the back of a sealed envelope or a black-market human organ to **FUTURISTIC ELECTRONIC ARTS COMP, TGM, *PO Box 10, Ludlow, Shropshire SY8 1DB***, to arrive by **March 23**.

Please note whether you have VHS or Betamax video, and what format you'd like the *Neuromancer* game on – C64, PC and Amiga are available. If you've got a different computer, you can choose another Interplay/Electronic Arts game instead (we suggest *Bard's Tale I*, available on CPC, Spectrum, ST, Apple II and Apple II GS).

QUESTIONS

- **1** Which actress played Ripley in *Alien* and *Aliens*?
- **2** In which American car-manufacturing city is *RoboCop* set?
- **3** What is the name of *Neuromancer*'s hacker hero?
- **4** On which novel by Philip K Dick is *Blade Runner* based?
- **5** Which American team, well-known for *The Bard's Tale*, programmed *Neuromancer* for Electronic Arts?

VIDEO VISIONS

The first prize

■ *RoboCop* . . . a futuristic thriller where only a cyborg can enforce the law – his own law.

■ *Alien* and *Aliens* . . . only one human survives *Alien*'s nightmarish journey through the blackness of space – and in the sequel she returns to confront the monsters from director Ridley Scott's darkest imagination. Both movies won Academy Awards for their special effects.

■ *Blade Runner* . . . also from director Scott, this classic of future vision stuns the viewer with its tale of 21st-century androids which run amok.

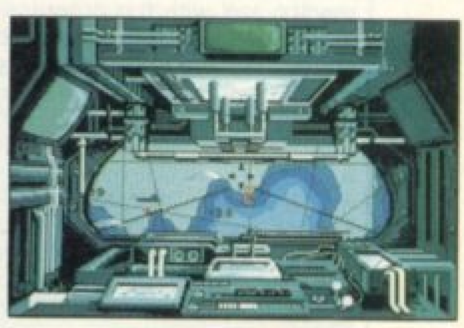


OPERATION NEPTUNE

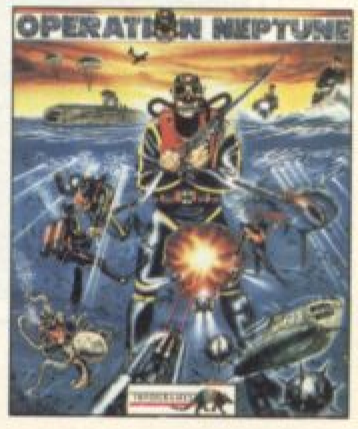








The tranquil surface of the Pacific Ocean belies the battle of wits taking place in the world's last unexplored territory. A perfect hiding-place for a determined enemy, or is it? Your jet-bike and technologically advanced bathyscaphe should help, but there are still the enemy bases to destroy, lines of communication to be knocked out, and the natural predators of the deep just waiting for a tasty snack at the first sniff of blood! So check your oxygen supply, and dive, dive, dive...

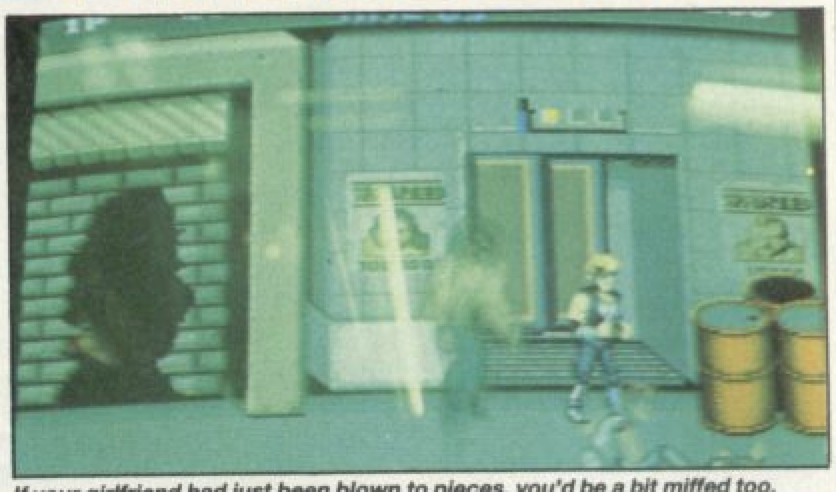


Atari ST, PC, Amiga £24.95
CBM64, Amstrad £14.95 (disk), £9.95 (tape)

INFOGRAMES, MITRE HOUSE, ABBEY ROAD, ENFIELD, MIDDLESEX, EN1 2RQ.

INFOGRAMES

CONFRONTATION: COIN-OP



If your girlfriend had just been blown to pieces, you'd be a bit miffed too. They're gonna paaaayyy for this!

The recent ATEI (Amusement Trades Exhibition International) at Olympia in London brought together manufacturers of one-arm bandits, pinball machines and video machines. This veritable heaven of electronic entertainment was experienced by Robin Hogg and all in the line of duty. It's enough to make you sick.

The award for the most surprising title was to be seen on the **Atari** stand in the form of *Tetris*, a coin-op conversion of **Mirrorsoft**'s horrifically simple but compulsive puzzle game. This is a most unlikely game to convert but in play it works extremely well either as a single or dual play game. *Tetris* offers highly original gameplay to test the brain and proves as addictive as it is on the home computers. My only moan is that an expert could be on it for hours, but then again so could an expert on any game!

Atari were also showing the **Namco** slash-'em-up *Splatterhouse*. In this reworking of the *Friday the 13th* theme Jason himself is brought back to life to stomp through dungeons and slime-encrusted hallways battling alien beings, worms and the like in the goriest manner possible. Simple gameplay devoid of anything new but worth a look for the 'interesting' graphics.

Also on show was the American Football of the 21st Century, *Cyberball*. Rather than have puny humans taking part Atari have got together two teams of 21st Century robots to play one even rougher and tougher sport than it normally is. The twist in this violent tail is that the ball is a miniature reactor and with the progression of time the ball heats up. If a robot doesn't score a touchdown or get rid of it quick it explodes turning the player into so much scrap metal! *Cyberball* is great if you like American Football, it's got over 100 offensive and defensive plays to choose from, extra robotic features such as turbo speed, some really nasty moves and a four player element for some *really* chaotic games!

The pride of the Atari stand though just had to be *Hard Drivin'*, a suspiciously familiar car racing game but one that will probably turn the whole racing theme upside down. Why? Well, the presence of flight simulator style polygon constructed 3D graphics creates a much more realistic environment to the game than the more common layered graphics.



The exciting dual-Uzi kill-or-get-killed manic-blasting follow-up to **Operation Wolf**

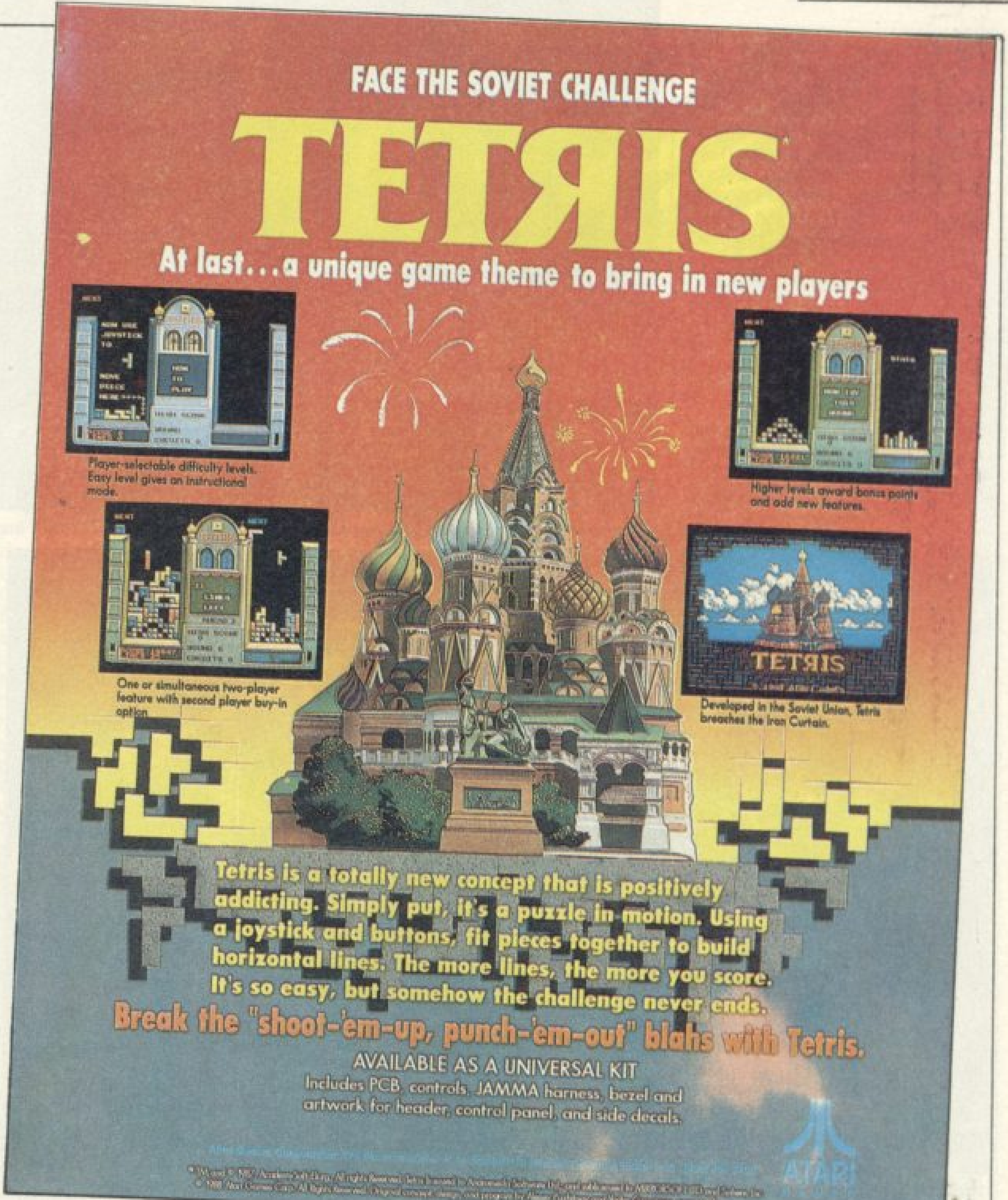
Not exactly a game which goes like the clappers but the smooth movement is astonishing as the car races past mountains, bridges and other roadside features.

Another feature is the presence of a clutch and four gears. This is optional depending on the driver's skill but this long awaited feature means the driver is given far more flexible control of the vehicle than in *Out Run* and its clones.

The ideas behind *Hard Drivin'* aren't new. The major part of the game involves negotiating stunt courses, avoiding other vehicles and racing against them. An instant replay feature, grudge races and even an ignition key spice up what is a startling if unoriginal race game.

Electrocoin, the masters of distributing top Japanese games were in force at the show. As well as a huge number of their existing games on show, they had **Taito** games galore. The biggie coin-op was *Operation Thunderbolt*, the follow-up to *Operation Wolf* now boasting double the firepower with *two* Uzi guns bolted onto the cabinet. The carnage with just one





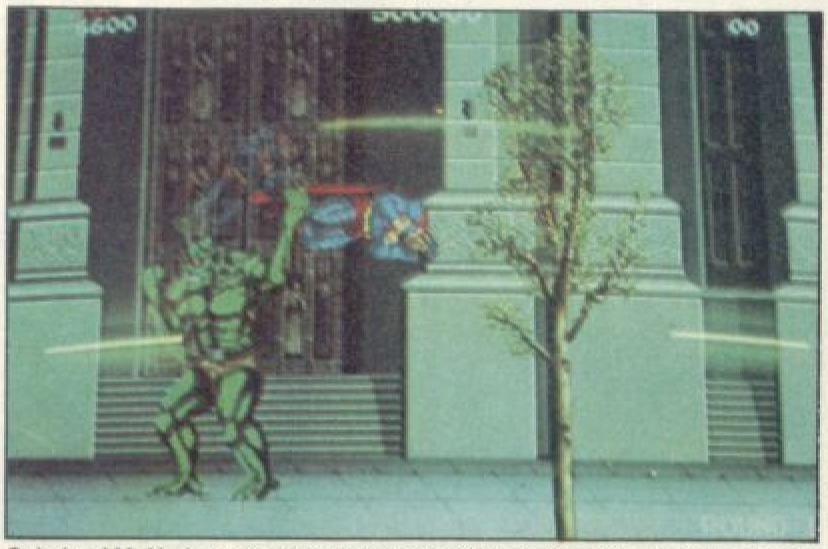
gun was pretty phenomenal but with two it's simply out of this world! Unsurprisingly the new missions are even harder and mean double the enemies with new enemy weapons to blow away or be blown away by. Great fun following in the excellent tradition of *Operation Wolf* and boosting the game's appeal even further with the teamwork dual play option. Expect this to be at the top of the 1989 Xmas software charts whoever gets the licence. It's a 99% certainty it'll be Ocean.

Also on the Electrocoin stand was **Capcom**'s *Strider* (originally titled *Falcon*). An olympic standard of physical training and dexterity is the minimum required if you want to be *Strider*. In this gem (which is soon to undergo the US Gold conversion) graphics go hand in hand with the most manoeuvrable future warrior yet seen – boy does this bloke move! From what I saw the game was devoid of much plot but involves the athletic Strider leaping from platform to platform, sliding up and down ramps, unsheathing his laser sword to take on aliens and collecting power-up capsules in a run of the mill way.

Using new Capcom technology the result is graphically stunning. Strider moves around a suitably dark, future background high above ground zero risking his neck leaping from platform to platform, scaling ramps and sliding down others. Strider can unsheathe a pretty impressive laser sword to hack at the aliens. Not really a shoot-'em-up but this is certainly one real good platform game.

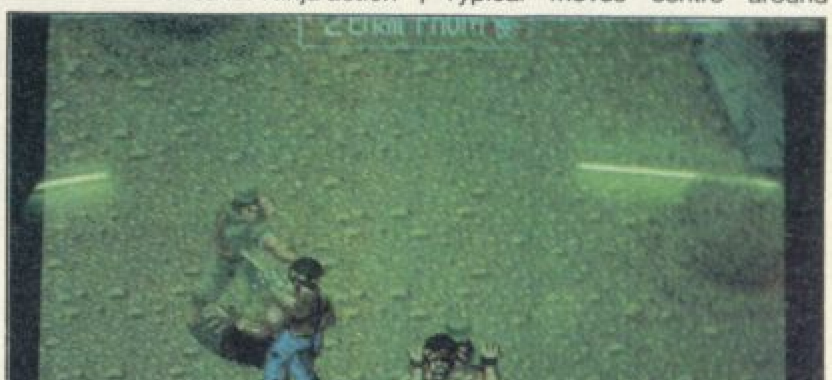
Sharing stand space with *Operation Thunderbolt* and the other Taito machines was Capcom's superb *Ghouls 'n' Ghosts* (coming soon from the US Gold stable). Previewed in TGM014 the final game is absolutely brilliant. Gameplay is traditionally *Ghosts 'n' Goblins* and hence can't fail in creating superb playability. And graphically Capcom wipes the floor with nigh on all other platform games (bar maybe *Strider*).

The atmosphere is dark and forbidding with all types of beasts of the night and titanic creatures to defeat. Some lovely touches include Arthur turning into an old man when zapped by a spell, the graphically far out use of sorcery, birds turning into feathers with swift sword blows etcetera. Go out and play this game now! It's the most playable game I've encountered yet, full of wonderful effects. Graphically this is one of Capcom's best yet and just fantastic. Enough said.


Ooh dear! Mr Underpants himself is in a bit of trouble. Never mind, the good guy always wins

While in the leaping, slashing, jumping mood, **Tecmo** have *Shadow Warrior* starting to make a UK appearance. Kicking off with the *Shadow Warrior* entering the USA it's down onto the grimy streets of America for Ninja action of the violent kind.

Shadow Warriors is an extension of the overly used martial arts theme and so wins no prizes for originality. The gameplay isn't startlingly new either but the warrior has some highly original moves providing a new approach to the old theme. Typical moves centre around

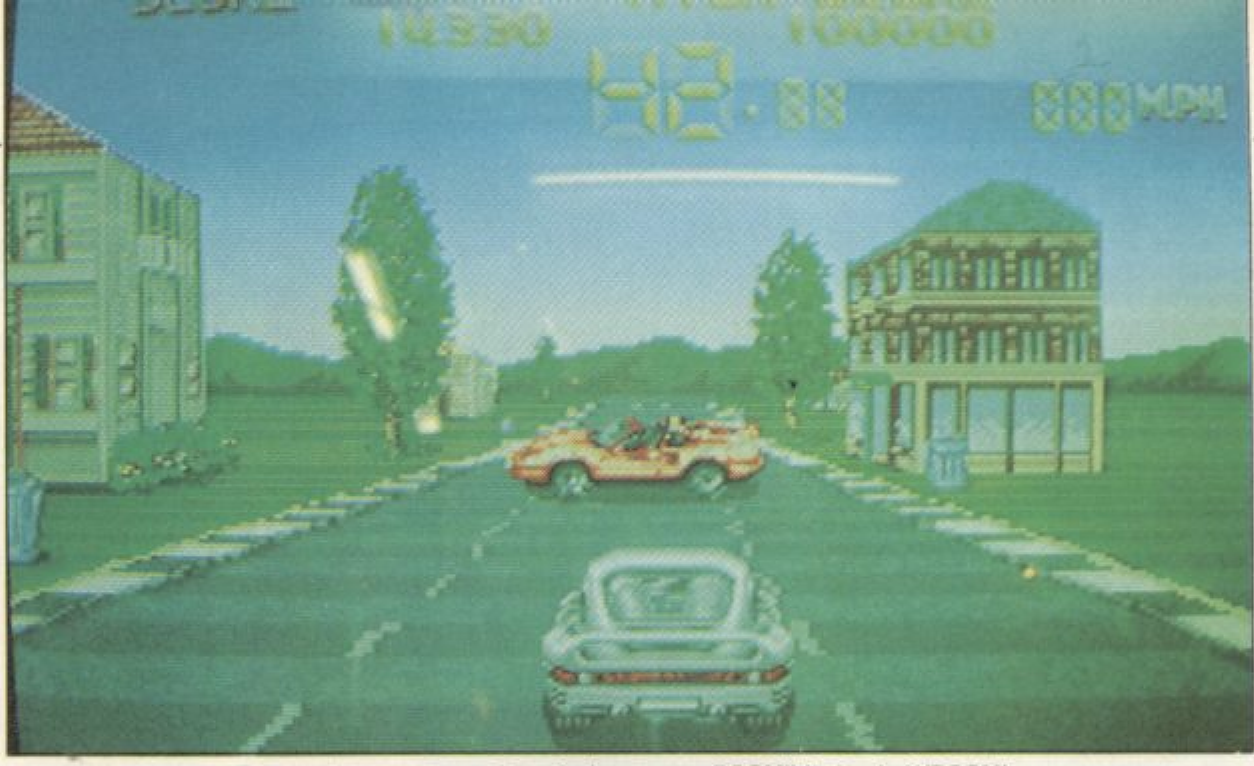

The sequel of the sequel of the Commando sequel *– and not a very good one at that*

PRESS ANY KEY

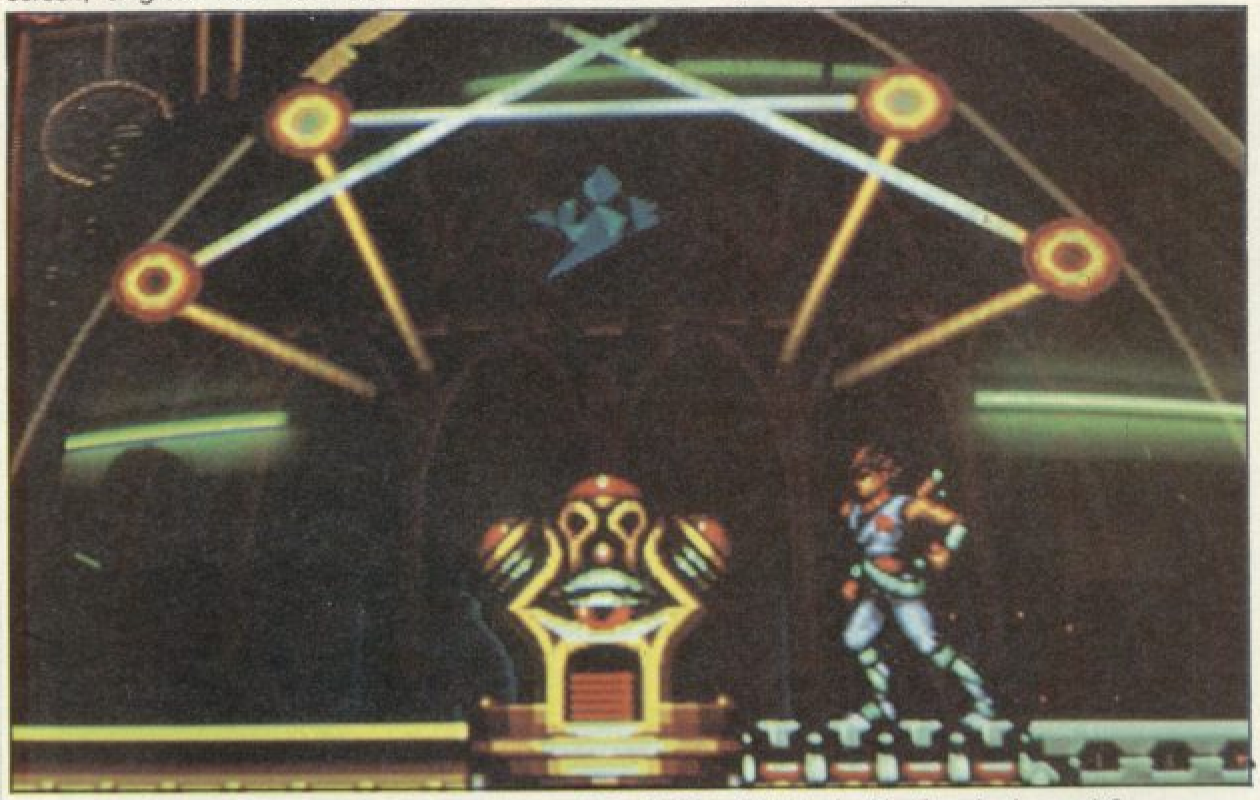
connecting foot with face and using swords, shurikens and the like. As well as this the warrior can show off with some very impressive 'Monkey' (remember the TV series?) style moves. Like *Double Dragon*, objects around the playing area can be used to great effect against the evil gangs, major villains and *very* big bad guys!

Picking up a thug, throwing him into a phone box and then swinging on a post to kick him into the middle of next week is immensely entertaining. Dodging cars on the freeway is another hazardous but fun occupation.

The graphics are superb containing immense detail within the backdrops and characters themselves. This is all tied in with a horribly gory continue play screen, a great front end and superb presentation (watch the excellent attract mode to see what I mean). With this product Tecmo looks set for stardom – if this isn't converted to the home computers within the year I'll eat my PCB.



You'd better go faster than 0 mph or your posey Porsche is gonna go BOOM!! instead of VROOM!



The athletic Strider is confronted by a laser-spitting pod. Can his hi-tech blade give him the edge he needs?

'Thank you for your co-operation' – the immortal words spoken by lawman of the future *RoboCop*, the latest hit from **Data East**. At the start human cop Murphy is blown to smithereens by hoods. Reconstructed by technicians to become the all walking, all talking, all arresting cyborg RoboCop is out to clean up Old Detroit.

Mainly horizontally scrolling with the odd vertically scrolling stage, *RoboCop* takes on lawbreakers with his fists and one mean gun (very nearly a cannon). The first stage is set in a Old Detroit street with the baddies appearing at windows, riding bikes, holding females hostage and performing other criminal acts. At the end of the level is an ED-209 who's out to stop you. And performing with unhealthy efficiency this time.

As RoboCop progresses through level after level, he gets to wander through the cinematic locations following the bare thread of the film. Following target practice in a 3D section, the metal man moves onto the drugs factory, OCP headquarters (with military ED-209's to match) and most of the other cinematic locations. Graphically very good, *RoboCop* is very tough, quite rightly there's only one life but the rate with which energy is lost is at times very severe.

The later levels do tend to get repetitvely similar and the ending is a cop-out (no pun intended) but *RoboCop* shows that Data East can still produce playable games with great sonics and graphics. Watch the film, play the computer game and treat yourself to a go on the coin-op.

Surprisingly it took until late last year before anyone got round to converting *Superman* into a coin-op hero. **Taito** have had a go and brought out a great game but breaking away from convention slightly in having *two* Supermen.

Once again a super-villain has designs on humble Earth, in this case the alien Emperor Zaas is sending hordes of his minions down to cities around the US and Superman (or men) are out to stop his plans. With a mighty kick, controllable power punches, sonic blast and heat vision lasers *Superman* is one tough saver-of-the-day.

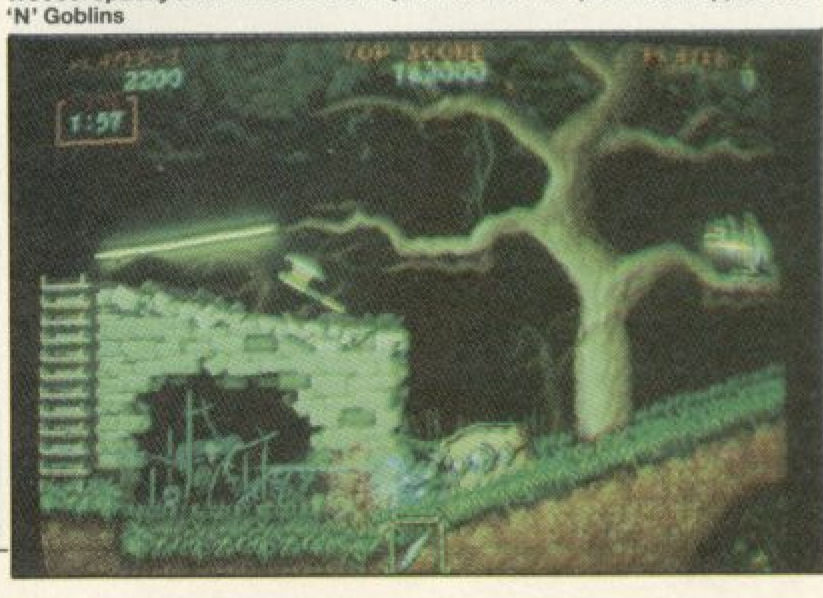
The action starts in New York as Superman runs and flies through the horitontally scrolling streets. Zaas's fiends line up to be kicked around, barriers need to be punched and other obstacles bar the man of steel's way. With an up, up and away Superman then aims skywards to shoot down incoming asteroids, the odd helicopter gunship and one of Zaas's end level atack spacecraft.

Made up of five levels, Superman goes onto San Fransico, Las Vegas, Washington D.C. and finally Zaas who's cruising along in his spacecraft. The creators of *Superman* will be pleased to see an enjoyable, action packed game such as this but if you're into originality you may be disappointed.

On the **Sega** stand was *Monster Lair* – featuring Wonder Boy – which is great if you like *Super Mario Brothers* style action, great if you like *Wonder Boy*, but not so great if you want some serious action. A game involving shooting walrusmen, catcuspeople, killer snails, lobsters, crocodiles and other comical foes can't be serious but this is where *Monster Lair*'s appeal undoubtedly lies. Superbly surreal to look at *Monster Lair* sees Wonder Boy Leo and girlfriend Papillo go through 14 rounds in an illogical attempt to imitate the ventures of a past hero. This is the third in the series and it's even more playable than the others.

As *Double Dragon* hits the computers, so *Double Dragon 2* –

Woooo! Spooky action in the follow-up to the classic Capcom coin-op, **Ghosts 'N' Goblins**



The Revenge hits the arcades. Forget going to rescue your loved one in this game. She's been riddled with bullets by the big boss. Looks like it's time for vengeance in **Taito**'s sequel to the evergreen beat-'em-up. *Double Dragon 2* will doubtless pull in the crowds but the gameplay is dismally unoriginal.

JUST SAY NO TO DRUGS! – that's the message shoved down your throat all the way through **William**'s superb new coin-op *NARC*. Along with Atari and the then low key Taito, Williams were *the* company of yesteryear for arcade amusement. With classic titles like *Defender*, *Bezerk*, *RoboTron* and *Star Gate* to their name, Williams have been noticebly missing as of late. Hopefully *NARC* will change all that as it not only a fine blast-'em-up but it also incorporates digitized rotoscope motion for the baddies. The movement of the second level baddies is extremely good and indicates the way to go in graphic animation. You could say Rotoscope motion injects life into the genre (ouch!).

One or two narcotics agents (looking more like futuristic bikers) leap out of their red Porsche to put paid to suspects dabbling in drugs. Walking through each level, the suspects are many but the good guys have some pretty impressive firepower to hand. As well as machine guns, rocket bombs can be unleashed for large scale destruction. You'll need them as the many villains (all clones of the one suspect) come out in great number. The object of each level is to either arrest the prime suspects or kill them – killing them is easier but you don't get the points (although you can get the hyperdermic point on the second level). Drugs, money and extra weapons can be picked up for bonus points and firepower.

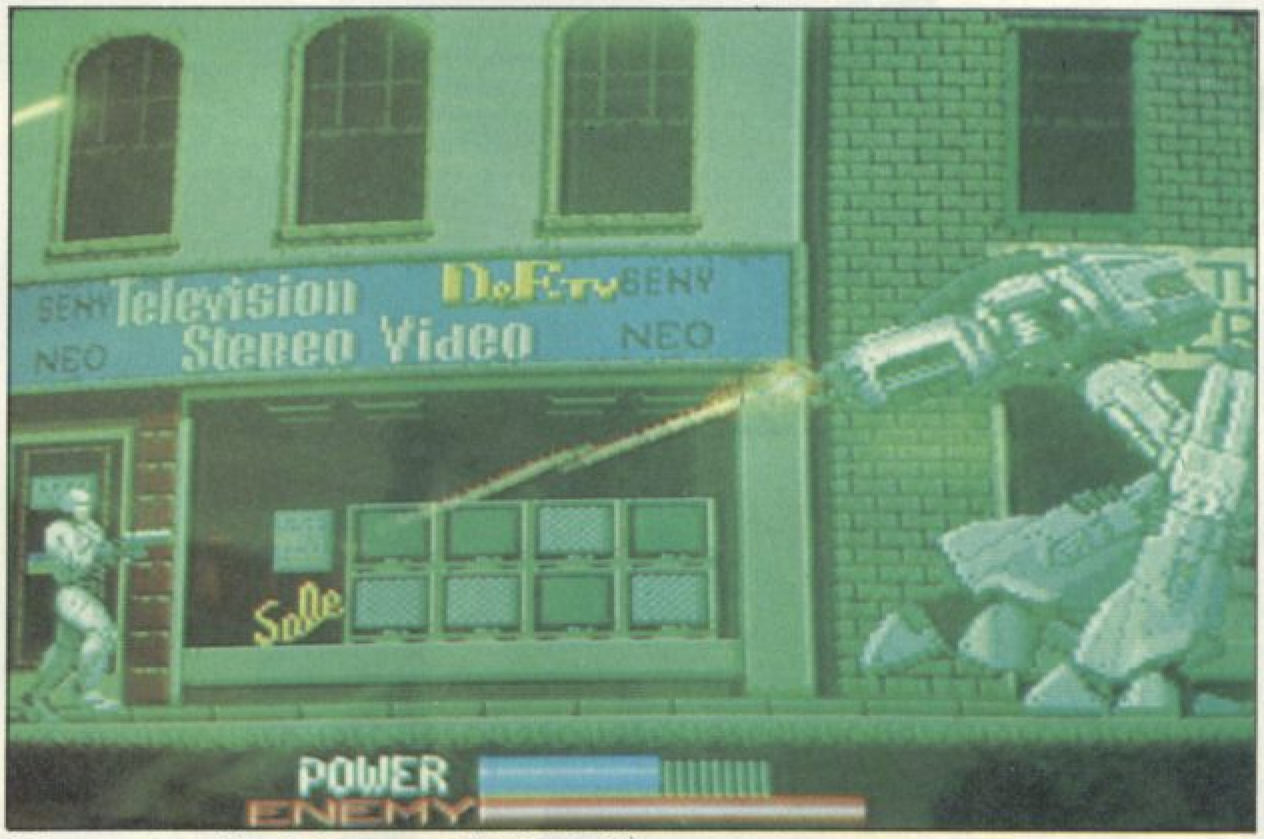
The agents move onto a subway platform, into a warehouse (look out for the dogs!), onto a bridge and more facing not only suspects but crimelords in their helicopters (heralded by a superb sound of the 'copter starting up and then taking off to attack the agents).

I cannot enthuse enough about this coin-op. Gameplay is as original as they come (i.e. not very) but the incredibly over-the-top violence along with a very clever animation technique makes this game wih a social message a winner.



If you thought you'd seen the last of the *Ikari Warriors/Victory Road/Guerilla Wars* lot then think again. **SNK** are dragging the last few dregs of life out of a tierd (but still profitable) game idea and attempting to compete with the bigger boys with *Ikari 3- The Rescue*. With one or two soldiers leaping, kicking and punching the enemy it fails to inspire and SNK look like they've pushed the Ikari Warriors theme way too far this time.





Cyborg versus machine, Robocop versus ED-209, RoboHogg versus coin- op . . .

A conversion from Friday The 13th, Jason is now a monster-slicing hero in Splatter House – eat your heart out Shaun Hutson! (Urrhh)



A glimpse of the future was offered by *Hard Drivin'* but Namco were the ones to show what could really be done with polygon graphics. Their new 3D Real Time CG Simulation System known as System 21 looked incredible as it showed off the new game *Winning Run* on the Deith Leisure stand. Using Polygon shapes as building blocks for graphic structures this Formula 1 racing game adds a whole new dimension to car driving – *true* first person perspective with no compromises!

What the polygons lack in colour within the shapes they make up for in realism. To all intents and purposes you and your car *are* there as you race around the track, through flood-lit tunnels, into the pits and up onto steep cambers (feeling the pull of gravity as you do so). Fancy going the wrong way around the course? *Winning Run* allows you to do just that! Watch out for more details of this astonishing coin-op soon!







Two freedom fighters lost in eight sections of a deadly galaxy are a lone force, their own control and determination are the only things standing between them and oblivion.

Featuring eight levels of frantic shoot 'em up game play with stunning and original graphics, animation and superlative music and sound FX – it's an eye and ear shattering experience!

Don't miss out on *Gold Rush II*

. . . or you'll hate yourself. On four specially selected copies of ARMALYTE is a secret code – if your copy of Armalyte has the 'gold' code you've won a fabulous Eye Of The Storm plasma globe. Four 'Yellow' coded copies could win you a super prize too!

CBM 64/128 Cassette: £9.99 Diskette: £12.99 Coming soon for the ATARI ST and AMIGA

"Eight beautifully defined horizontally-scrolling levels . . . it's a mega-game" ZZAP!

Thalamus, 1 Saturn House, Calleva Park, Aldermaston, Berkshire RG7 4QW ☎ (07356) 77261

ROBIN HOGG'S PLAYING TIPS

YOUR GUIDE TO BETTER GAMING

Last month we left you stranded at the end of a level in *Last Ninja 2*. Assuming you haven't progressed any further (whadaya mean you have?), here is the rest of the solution.

LAST NINJA II

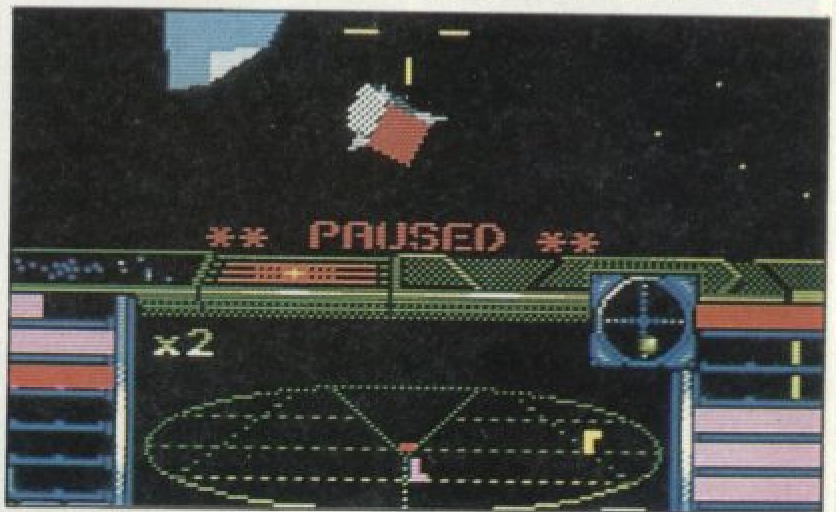
C64

LEVEL 5 – THE OFFICE

Leave the first screen and go through the blue door and touch the computer in the office. The computer will give you a number which you should note down. Go back out and follow the path down and around to a screen with two doors on it. Go through the top one and walk over to the desk near the pictures. Stand at the bottom and use the 'pick up' movement to touch the button on the table, thus opening a secret door. Climb the ladder on the next screen to reach the second floor of the offices, then go out through the door. Go through to a room with a fan in it, stand close to the wall and face backwards. Keep nudging the ninja backwards until you reach the back wall then go to the grate and use 'pick up' again to open it. Go out onto the ledge. Follow the ledge around and go up the ladder. Kill the next man you see then put away all your weapons. When you get to the last screen of this level you will see Kunitoki making his escape in a helicopter. Stand at the top right hand corner of the screen and when the helicopter leaves, somersault off the building and onto its landing skid. The helicopter will now carry you to the next level.

LEVEL 6 – THE MANSION

This level starts with you still hanging onto the helicopter, so to get off without killing yourself, pull down on the joystick when it flies past the turret and you should drop down safely. Somersault forward, landing in line with the turret on the left, then somersault again to land on it. Now gently nudge left off the turret and walk along the grey strip until you reach the window. Face the window and somersault again to land inside the mansion. Walk down the corridor into the next room, go through the big door and collect the rope so that you can go down in the dumb



waiter. Turn off the alarm then walk behind the plant where you should find an entrance. Punch the switches on the wall to switch on the lights in the maze which is on the next screen. Get yourself through the maze (this is pretty easy) and you should find a steam engine. Redirect the steam by touching the right hand switch on the boiler and you can walk through the door to the next level

LEVEL 7 – THE FINAL BATTLE

Kill the guard in the first screen, then walk through to the room with the pentacle on the floor. Go over to the tapestry on the wall and lift it up to reveal a safe. Unlock the safe with the combination from the computer in the office and take out the orb. The man himself, Kunitoki, will now enter the room and you've got to kill him so that he falls somewhere inside the pentacle. Before he regenerates, light the candles on the points of the star and put the orb back in the safe to finish the game.

ELITE

(Amiga)

When asked for the pass word in the manual type SARA, then type in the correct word. When the game starts, press the '*' key on the numeric keyboard to enter the hacker screen, change one or more of the following. When finished press the Escape key to return to the game. Thanks to Andrew McGarringle of Yorkshire. Change number from the first to the second.

23 to 02	Large cargo bay
24 to 01	ECM system
32 to 01	Docking computer
28 to 01	Beam laser
26 to 01	Pulse laser
2C to 01	Escape capsule
3C to 01	ECM Jammer
2F to 01	Energy bomb
3F to 01	Cloaking device
34 to 03	Galactic hyperdrive
38 to 01	Military lasers
36 to 01	Mining lasers
40 to 01	Food
47 to 01	Textiles
49 to 01	Radioactives
4C to 01	Slaves
50 to 01	Liquor/Wines
54 to 01	Narcotics
5C to 01	Computers
63 to 01	Machinery
67 to 01	Alloys
69 to 01	Firearms
6C to 01	Furs
72 to 01	Minerals
75 to 01	Gold
79 to 01	Platinum
83 to 01	Gem stones
84 to 01	Alien items
88 to 01	Unhappy refugees
8C to 01	Thargoid documents



OPERATION THUNDERBOLT

(Arcade)

Brand new tips for a brand new coin-op!

■ Aside from general survival go for the laser sight as soon as you see it. With that little red spot on screen you can aim with total accuracy (very useful for the terrorist airliner seige).

■ Go for the ground targets more than the aircraft and helicopters, the MIG 25's are too fast to cause much damage and the helicopters take their time to turn round and fire. Soldiers, tanks and the rest are a lot quicker and much more dangerous!

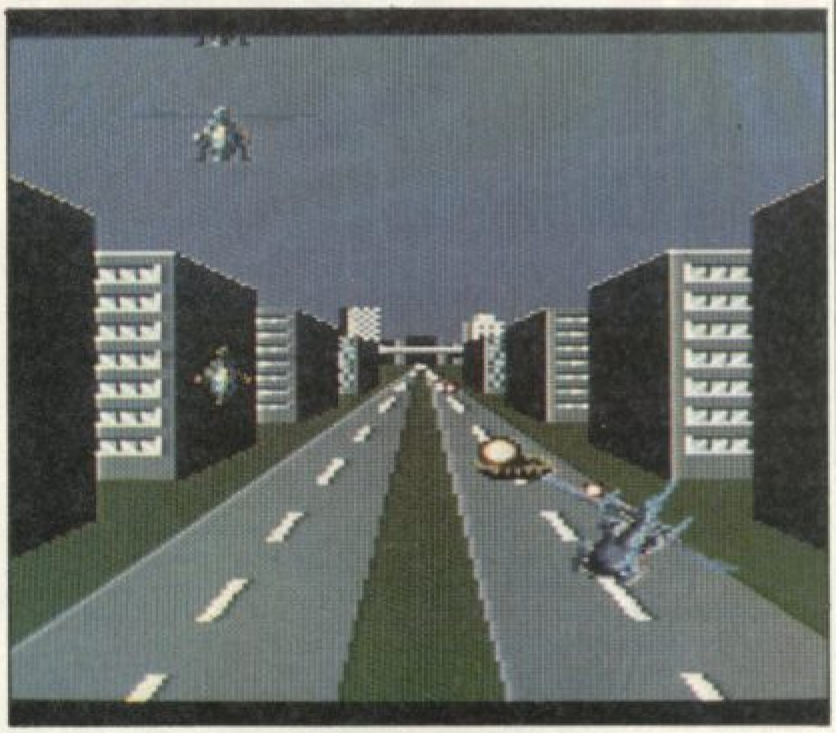
■ Get another player in on the action. With double the players you get double the firepower and double the destruction!



THUNDERBLADE

(Sega)

■ Towards the end of level fortresses, guide your helicopter to the left or right top corners and without having to risk a life to destroy the final gun turrets, the fortress immediately goes up in fire and smoke.



TRANSBOT

(Sega)

■ The quickest and easiest way to destroy the end of game alien is to use fire power A for normal fire, or fire power B for beam.

HEROES OF THE LANCE

(ST)

■ Use the FIND TRAPS spell often, as falling rocks tend to severely damage your team.

WANTED

(ST/Amiga)

■ Don't go for power-up barrels if they're in the bottom half of the screen – the automatic scrolling invariably traps you against a rockface and the baddies have no qualms about filling you with lead when you're in this position.

■ Remember the fixed layout of power-ups, collecting skulls decreases the number of items you have so watch where you walk.

■ Immediately kill any cowboys that appear just above your position, they're deadly at such close range and have a nasty habit of forcing you into the throng of bullets fired by others

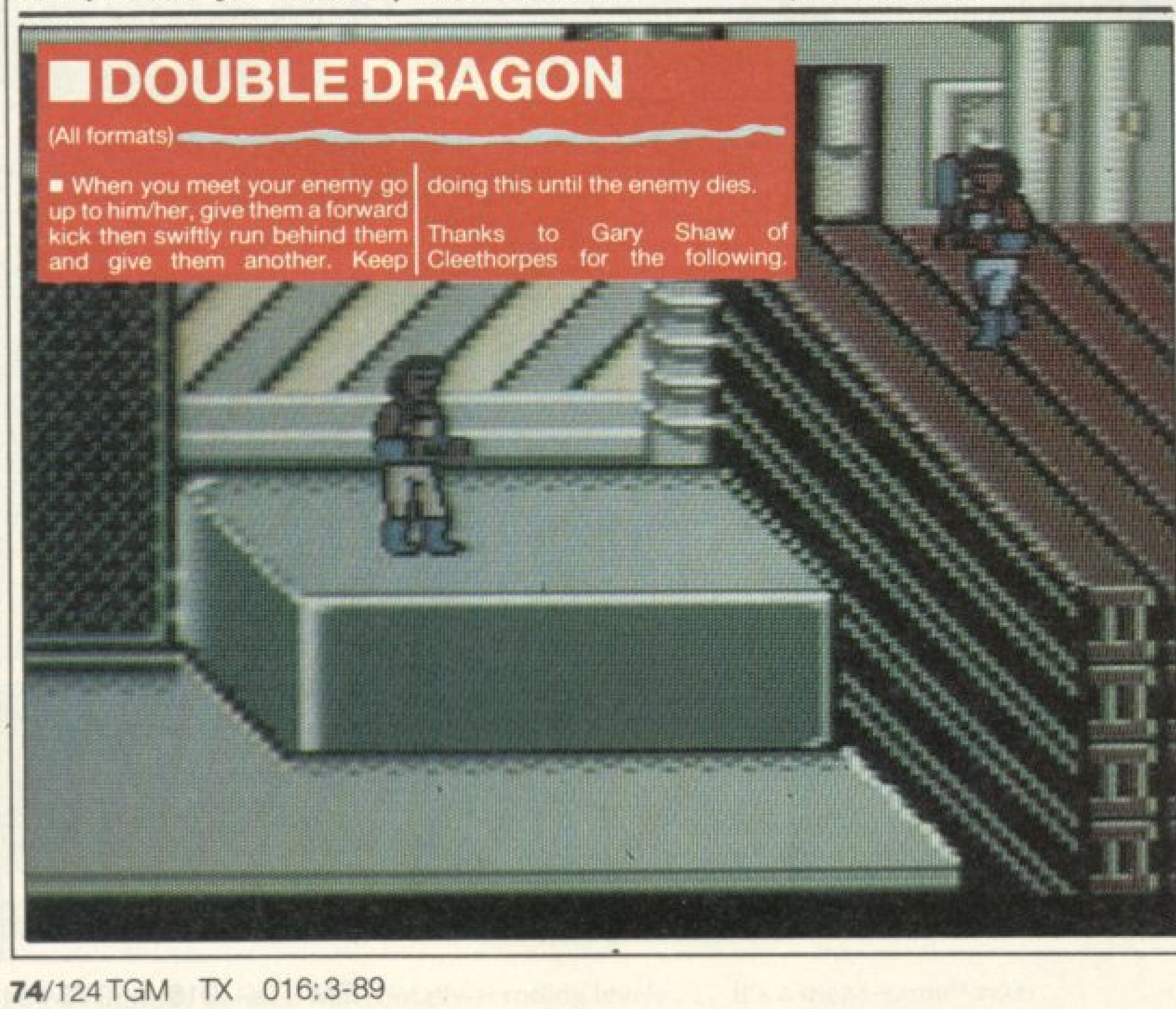


DOUBLE DRAGON

(All formats)

■ When you meet your enemy go up to him/her, give them a forward kick then swiftly run behind them and give them another. Keep doing this until the enemy dies.

Thanks to Gary Shaw of Cleethorpes for the following.



THE NINJA

(Sega)

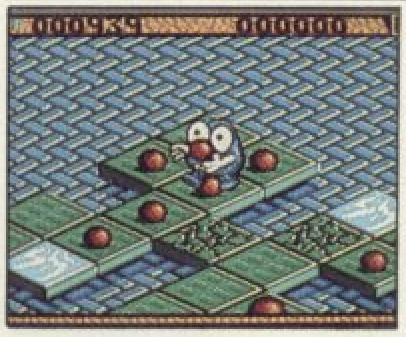
■ When fighting walk backwards and walk from side to side while pressing fire button 2. This is particularly useful when you encounter the pack of wolves.

BOMBUZAL

(Amiga)

In each case the code word is followed by the corresponding level.

ROSS	8
RATT	16
LISA	24
SINK	28
DAVE	32
BIKE	36
IRON	40
BIRD	44
LEAD	48
TAPE	52
WEED	56
VASE	60
RING	64
PILL	68
GIRL	72
SPOT	76
GOLD	80
PALM	84
OPAL	88
LOCK	92
SONG	96
SAFE	100
FIRE	104
WORM	108
LAMP	112
TREE	120



Thanks to Bob Manners for the complete list of code words for Bombuzal on the Amiga.

Anonymous of Newcastle is an avid ST games player. Here are a couple of tips for it.

FOOTBALL DIRECTOR 2

(ST)

■ When you first start the game accept only short contracts (up to about 25 weeks). This allows you to spend lots of money on players whilst avoiding getting sacked for overspending.

■ When offered a new post take it, even if the team is doing well.

■ In the third and fourth divisions use your youth team to develop players.

■ In the first and second divisions use your youth team to develop players to sell and use the money to buy any player from skill 6 and upwards.

■ Never buy players over a skill 7 – you can usually raise their level to 9 by using extra tarining.

■ When giving extra training try to have at least one spare player for each position as injuries are quite common during training.

■ If you take out a mortgage, make sure the players you need are on offer that week – the directors have a nasty habit of taking at least half of your current account when it gets too large!

■ Always put Goldmoon and Tanis third and fourth in your party with your smallest team member first, as he can avoid most spells and is deadly with his axe.

■ During the early stages, the only real problem in combat should be the hatchlings. They are invunerable to magic, so use your deflect dragon breath spell to get Tanis to the front. Use his range weapon (the bow) and aim at the hatchlings stomach. 5 or 6 well placed arrows will dispose of him.

AFTER BURNER

(Sega)

■ When confonted by the Flying Fortress after stage 6 just guide your F-14 to the top left hand side of the screen and then after a few seconds you immediately re-appear on stage 7. Do the same for later confrontations.

OUT RUN

(Sega)

■ The quickest and easiest route to one of the finishing lines is to keep going right. You get a faster time and more points.

KINGS VALLEY 2

(MSX)

TRYAGAIN
FESTIVAL
MBMAHKPL (MUSIC STAGE)
DDMAEMDP (LAST ROUND)

Thanks to Harry Robbertsen of Holland for these passwords.

KUNG-FU KID

(Sega)

■ Kick the wall towards the top at the highest floor on the right on level 5 to get a jar of water to ward off enemy fireballs and also turn your hair pink.

■ On the fifth level go to the wall on the left of the second highest floor, then quickly kick the wall repeatedly to get a bun which tops up your energy bar.



THE MUNSTERS

(Amiga)

■ From the start go right to the end room and wait in the middle of the room, then shoot the ghosts until you fill the spell jar to the top, then go down the stairs and collect the object to the left, then shoot the ghoul to the right.

■ Go right to the graveyard and collect the cross, go left and up the stairs and keep going until you come to the big flight of stairs.

■ Go down, watch out for a certain ghost because if he touches you he reduces the spells very quickly. Quickly go left, shoot the three ghouls, collect the bottle, go right two screens to collect the key.

■ Go left and up the stairs, go far right and down the stairs, go left, kill the ghoul, go quickly down the stairs and kill the three ghouls.

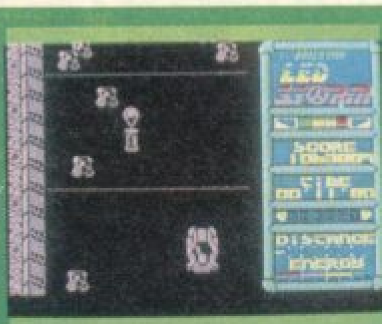
■ Go left and get the object, go right to where Herman and Grandpa are, collect the object, go left up the stairs and wait in the middle of the room for the vampire to kill him. You'll have to find out how much spell power you'll need to kill the vampire.



LED STORM

(All formats)

■ Pretty obvious really, keep jumping on the straights but learn where the ramps are and use them over the gaps. Go for the bumper icons to give you temporary invincibility and anticipate bends. On level two, slow down before the end of the second canyon and turn hard left or right to avoid the first and then second cliff face. Level four is a doddle, stick to the not so straight and narrow brick road and avoid the Easter Island heads. Go flat out once you get to the ribs.





SORCERY

(ST)

Brendan Linehan of Mallow, County Cork has sent a cheat for the ST version.

■ Type in **GAS MASK WHEELER WANTS CHEAT** (including spaces) and your sorceror will now be invincible.

THE PRESIDENT IS MISSING

(ST)

■ This isn't really a hint, more a bit of technical advice! When trying to decipher the five coded transmissions the best way to go about it is to record them onto a blank tape and, if you can, slow down the tape speed. This allows you to work out what are dots, dashes and word breaks. By using an equaliser you can also get rid of some of the background noise which disrupts your concentration.

TOP GUN

(Nintendo)

■ If any enemy planes are coming up from directly behind, just stay still and watch as they fly directly into your waiting sights (you may need to climb or dive to see them).

■ Any jets that lock onto you can be shaken off with first a bank to the left/right as far as possible followed by a smoothly executed and sustained bank in the opposite direction.

■ When landing *immediately* correct any deviations in height or airspeed. Landing leaves no room for mistakes. You can't crash into the ground so don't worry about your altitude.

■ If you see a missile coming towards you, try to shoot it down. Dodging it is difficult and often the missile can match your turns. With multiple missiles you're in it deep so try to shoot down a couple of them and avoid the rest.

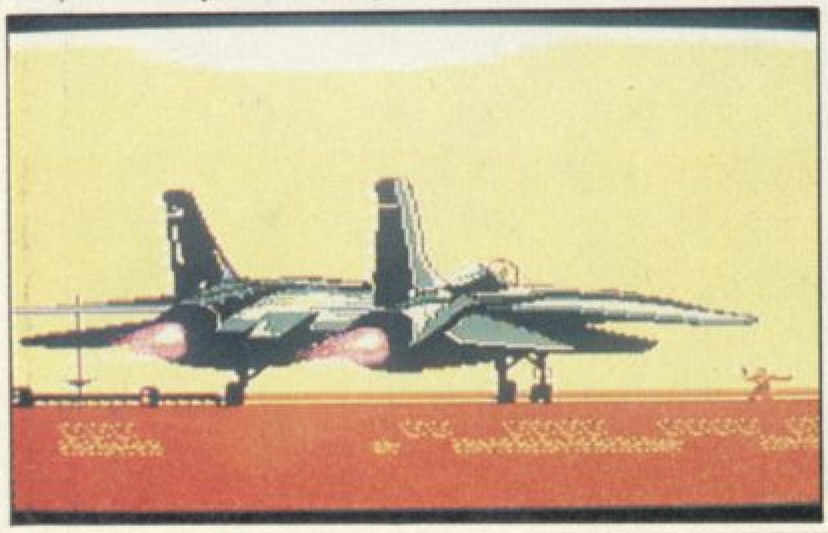
■ LEVEL 1

■ For level one, use the hound missiles, they're in abundance and they do the job as well as any other.

■ As this is a training mission, just keeping firing at anything the flies past.

■ LEVEL 2

■ Arm up with the Wolf missile with its double destructive power and reserve them for the battleships, submarines and the aircraft carrier. Use cannons on the aircraft and missiles.



MANHATTEN DEALERS

(ST)

■ On the screen in which four people throw bricks and spanners at you, just position your man inbetween the people in the small alley in the middle of the screen. Now wait and soon the people run out of things to throw at you. You also cannot get hit.

NEMESIS 3

(MSX)

■ Above all else, learn the patterns and keep on the offensive and don't let anything through. Mobile and fixed gun emplacements tend to channel you into a corridor of death if you don't take them out sharpish.

■ On the weapons selection screen go for the bottom left Vixen star fighter – the napalm missile it offers destroys formations of aliens with one blow. Go for the forcefield to provide weak but total cover and also the fixed multiples. The rotating multiples are good for clearing mass sections of bio-growth but not much good for accurate fire.

■ When up against mother-aliens which throw out masses of aliens and bullets a Ripple laser is your best bet. Don't try and collect the Fireblaster special weapon – it's completely useless against long range targets.

■ On the black hole level try and get *all* speed ups, you'll need them all to avoid getting warped back to the start of the level.

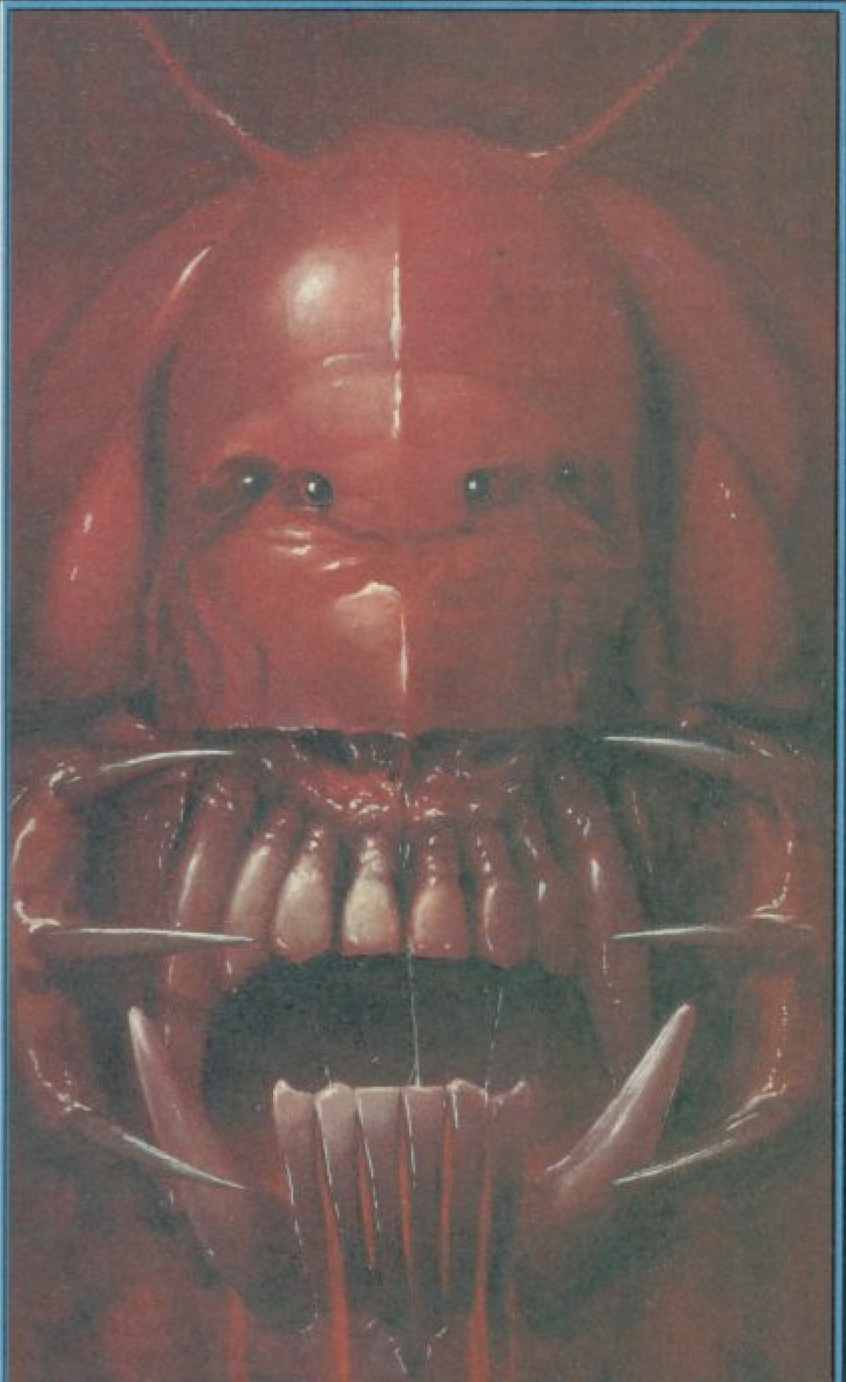
SHINOBI

(Sega)

■ On the title screen push the controller diagonally down and right whilst pressing jump button 2 and you'll be able to select which ever screen you want to tackle.

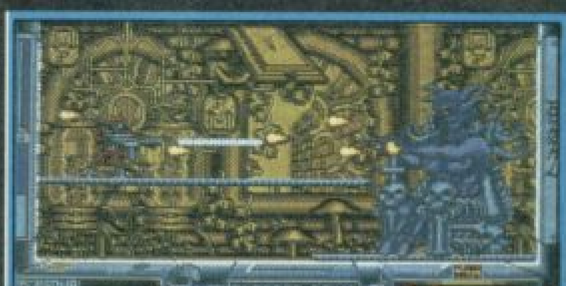
That's it for March. Gary Shaw scoops the £40 software jackpot this month, and if you want to do the same send your gaming tips to the usual address: **THE GAMES MACHINE, *PO BOX 10, Ludlow, Shropshire, SY8 1DB.*** Please mark your envelope PLAYING TIPS and include a list of the software of your choice.

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RADAR OF THE LOST ARGONAUTS

How do you simulate a plane that's top secret? In this second instalment of the TGM/Argonaut diary, programmer Pete Warnes explains how the *X* team managed to recreate realistic radar.



Christmas 1988 was fast approaching and hardware problems plagued us, but the *X* development schedule forced us to plough ahead. *X*, we were coming to realise, was going to be the most complex game we'd ever seen! There were major new routines to write and none of them looked like being easy.

I was to spend a few months working on routines for the radar and the pilot's head-up display (HUD), as well as data structures for the complex gameplay. We decided to start off with what we thought would be easiest: the radar and its display screens.

As it turned out, the HUD was intimately tied in (rather too intimately) with the workings of the radar, so I ended up working on both routines at the same time. The task was to simulate a modern fighter radar, but we didn't really know where to start! Where could we gather the information on what a real one looks like – and what does it really do?

We reckoned the best place to start was the bookstores. After all, there must be hundreds of books written about jet fighters and their radars . . . Surely all we had to do was drop by Foyles or Dillon's in central London and they'd point us at treefuls of books . . .

Alas, not so. Though there are countless thousand books written about jet fighters, almost every one had as much techie detail as a Ladybird book (no offence to Ladybird books, of course). There were luvverly glossy arty colour photos of aircraft and wads of text about the armaments and even the power of their megathrusty jet engines, but these books had precious little to say about how weapons actually worked, or how radar computers on the ground calculate threat evaluations of potential targets, or how the pilot interacts with the radar displays and controls.

It was almost as if there were a conspiracy against us. Did no book ever mention HUD or radar intelligence? Was all this stuff really classified, or was it just hiding in obscure books like *101 Things To Do With Your F-16 HUD And Radar Attack Computer*? I remembered reading about some Soviet fighters whose radars were allegedly designed from stolen American technology. But where was the nitty-gritty?

No doubt a much less sinister reason was that techie books on radar innards can't exactly be mass-market stuff. I mean, little Johnny who wants a pop-up book of Soviet MiG 29 fighters doesn't really wanna know how the radar works when all he wants to do is cut out the piccies and glue them together into a nice little mobile for his bunk bed, complete with Tom Cruise in an upside-down F-14 giving one-fingered salutes . . .

We ended up buying an unnecessary number of books on the subject in the vain hope that eventually one might provide enough information to begin writing the *X* radar routines. A lot of searching later, we finally managed to glean what we needed, mostly from a couple of particularly fine books in the *Aviation Fact File* series.

We realised it was possible to emulate the workings of the radar without having to know precisely how the real McCoy's software worked. And anyway, if we ever got a close look at the real thing you can bet we'd soon be guests of the US Department of Defense . . .

A choice at last

By far the best data we possessed on radar was for the Hughes AN/APG-65 Coherent Pulse Doppler Radar, as fitted to the Northrop F/A-18 Hornet, which is the US Navy's replacement for both the F-4 Phantom and A-7 Corsair. This was mighty fortunate for two reasons: the Hornet is a remarkably capable fighter, with versatile radar.



Creating the pilot's view: X programmer Pete Warnes

NEW READERS ■ START HERE

The story of *X* is the story of a new kind of simulation – a flight game that looks ahead of our time to the Nineties, when stealth planes (undetectable by radar) will be the norm. But as this month's inside story shows, if the simulation's to be realistic it still needs a radar function more sophisticated than any around now.

Jez San and his team at Argonaut Software, who earned 97% in TGM**011** for their cloud-cruising classic *Starglider 2*, are writing the program codenamed *X* for Electronic Arts, who hope to release it later this year.

The first part of their diary appeared in TGM**015**; more will follow from different members of the team.

Now read on . . .

And of course it would be a fun jet to simulate! Not only does the Hughes APG-65 radar offer powerful features, the cockpit interface is one of the most computerised in any fighter to date, with a glittering array of multifunction graphic displays and powerful radar software.

As work started on coding the radar, we realised that the routines involved more than just a scan of surrounding objects. The Hughes radar has the popular ability to seek out enemies, and can even carry out threat evaluations on multiple targets. It can keep files on the ten most threatening targets while presenting the pilot with the top eight – purely for educational purposes, of course, not like he'd want to shoot them down or anything . . .

It has funky modes to detect objects against a background of rough sea. It can even map out terrain, guide the pilot through obstacles in poor visibility, discern the number of enemy in close-packed formation at great distances and (they think of everything) lead the pilot through a close-range dogfight by giving continual steering information and

TURNAROUND TIME

Tricks of the 3-D trade

Rotation is the art of rotating a 3-D object about any axes. There are three: pitch, yaw and bank (in our terminology these are x, y and z angles).

All our rotations are done at viewing time – when an aircraft wants to turn we just adjust its angles in the 'alienblock', a clump of data that represents where that aircraft or building lives. (It's called the alienblock for purely historical reasons.)

This differs from some other companies' 3-D techniques. Some 3-D graphics methods, notably the early 8-bit systems, used incremental rotation. Every time an aircraft wanted to turn they would manually turn each coordinate of it in a data area, and whenever they wanted to draw it, they just read out the coordinates and drew them.

This was fine for a few objects, but it's overkill when you have large numbers of things moving and rotating every single frame!

The 3-D illusion

Projection is the art of converting a 3-D point (with x-, y- and z-coordinates) into a 2-D coordinate for viewing on a flat screen.

To display a 3-D view on the screen, all the objects within view have to be rotated, projected and finally rendered (scan converted) into polygons. The maths and logic to perform these tasks isn't that hard: it consists of a few multiplications and divisions for every single point of every 3-D object that's visible, and it's in the graphics textbooks.

What's difficult is making it go fast, and optimising it so it takes as little time as possible!

We've spent a long time refining our 3-D and graphics routines (many man-years), so we now have well-optimised routines. These program components, which don't have to be completely rewritten for every game, allow us to spend a lot of time writing a deep, powerful simulation like *X*.

weapon-launch cues. Altogether, there are 14 different modes, all of which we have to emulate.

We began writing the main structure of these emulation routines, but already we were planning how to tackle the other vital radar-associated feature, the HUD. It would be easier to integrate the two routines if they were written concurrently.

The code for scanning nearby objects wasn't too hard to write: the really tough work was for the threat evaluations. These all seemed much easier on paper, made up of phrases such as 'sort the targets in the order of how soon each will be in range of the aircraft'. That's easy for someone to *tell* you, the human brain being capable enough to understand 'tie your shoelaces' or 'huzzle that pizza', but putting it into code isn't quite so simple!

For a microcomputer to do these kind of huge calculations on a lot of moving targets is a tad demanding on processor time. The code must be as efficient as possible to get them done quickly, or the time spent on threat evaluations will slow down the graphics.

"If we ever got a close look at the real thing, you can bet we'd soon be guests of the US Department of Defense"

After all, other people on the *X* team were working very hard to make the graphics faster than ever; who was I to destroy all their hard work by letting the radar code cripple the speed of the game?

Sorting enemies out

One of the most significant pieces of code I tackled was the sort routine, which would put all the threats into a priority list many times a second. Since it had been decided to copy the Hughes APG-65 radar as closely as we dared, this routine had to sort the targets into the 'ten most wanted', just like the real thing.

After discussing the problem, we settled on a sort routine that only sorts the current list of ten targets by inserting new ones as they develop – ie, as the pilot/player flies along and encounters different threats. Since the number of targets would never be over (say) 50, this would work quite nicely.

We started writing the sort routine with the aim of making it as fast as humanly (computerly?) possible. The immensely complicated code was finished in three or four days, but it took two more days to debug; we were quite pleased, because debugging these nasty intricate routines has been known to take *weeks*.

The sort routine was placed into the niche in the radar code that we'd reserved for it, and we could finally turn our thoughts fully to the HUD. But that's another story . . .

Meanwhile, as all this was being done, I was busy getting the graphics even faster, and implementing 32-bit math accuracy. This allows far-away objects to be visible, showing details that not many games have shown before, like cities, long roads, runways, airports etc.

The code was designed to allow arbitrary scalings of objects up to a few thousand miles in diameter. Since you can only see a few hundred miles ahead (tops) this should allow us more flexibility in the scenery we depict, as well as stopping that annoying problem of large objects becoming 'visible' before you could see them in real life.

You see, in a 16-bit world you would orbit a planet very quickly. Assuming our minimum units were metres, the maximum diameter of a planet would be only 64 kilometers (km) – hardly even asteroid size. This explains why you could orbit a *Starglider* landscape in mere seconds, flying at 400 metres per video frame (or in real terms 20km per second!).

In *Starglider 2* we improved our routines, using 32-bit coordinates to increase the size of our 3-D world, but we kept all the 3-D calculations to a local 16 bits for performance purposes (back then, we thought 32-bit 3-D calculations would be too slow when the processor is only 16 bits). So you would be flying around a larger planet, but you could only see up to 64km ahead of you at any one time.

This suited us fine at the time. But come *X*, we needed the flexibility to see large distances in any direction. Mountains oughta be visible a few hundred km away, and cities and roads shouldn't suddenly appear large – they should fade in from the distance.

So the 32-bit maths was improved to allow rotation and projection (the technical term for how the 3-D view is constructed; see box headed Turnaround Time), and at last we had the capability for large objects and distant objects.



Dial A Prize!

Phone-in fun with TGM!

TBzzzzt! Klikk, klikkk, wrirrrrr, brrr brrr CLICK! Yes, the TGM Hotline is in operation again – pick up your phone and dial the number and listen to a fact-packed two minutes of information detailing release dates for the **top games** for February and March; and this month we're offering you the chance to win one of **50** copies of **Wec Le Mans**!

Every month we'll be adding more and more to this unique service, coming soon we'll have a Billboard line with hot news, delivered direct to you, of course you'll be able to read the full story in the following issue of TGM.

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Dial the number (prod, prod) and listen carefully to the three questions. Fill in your answers in the boxes provided and complete the tie-breaking sentence given to you over the phone.

When you have complete the questions, write you name and address, and your computer format and send it to: **WEC LE MANS HOTLINE COMP TGM, PO Box 10, Ludlow, Shropshire SY8 1DB**. All entries to reach us by March 15 1989 and, as always, follow the competition rules or you'll be left in the pits!

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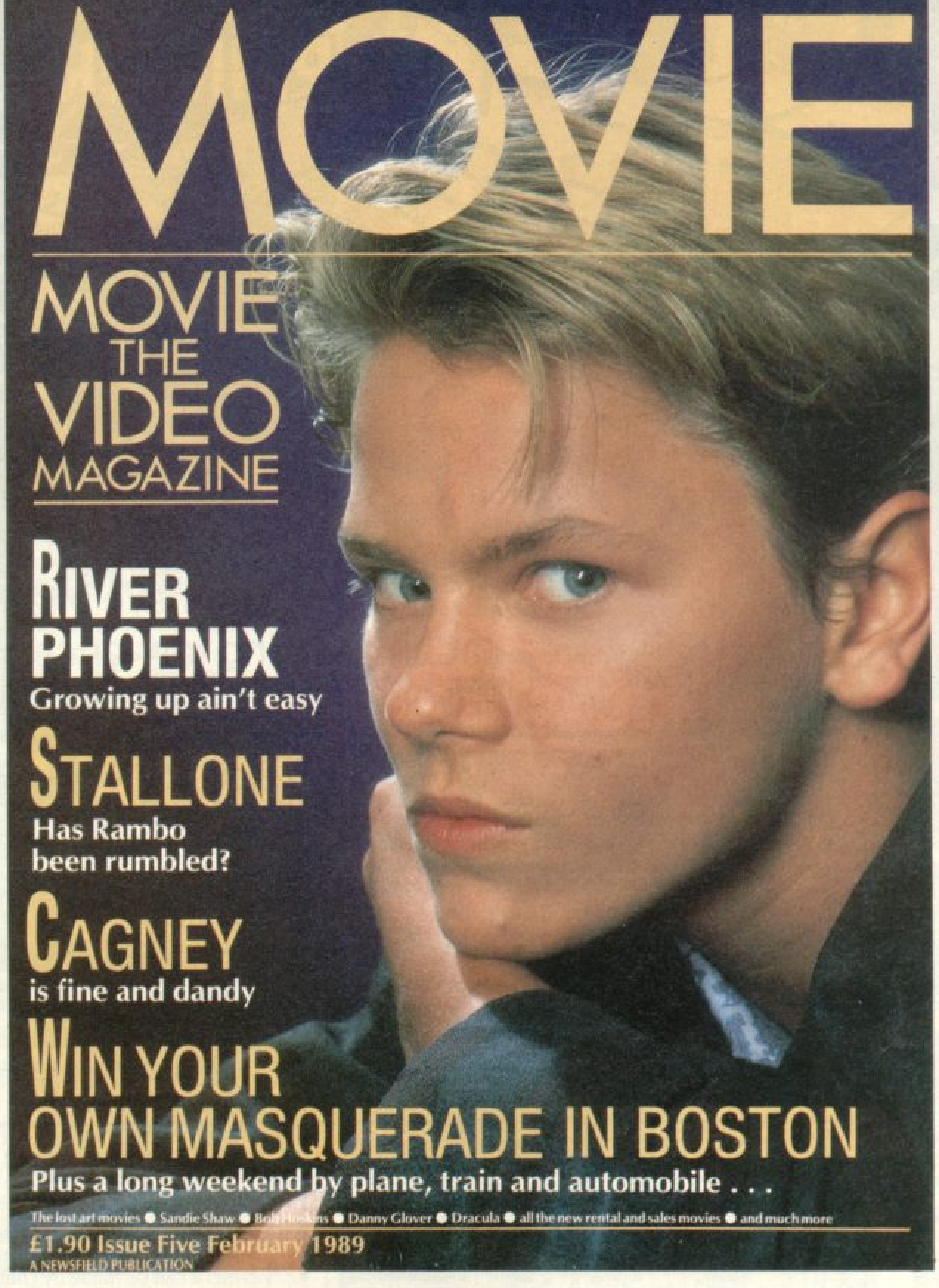
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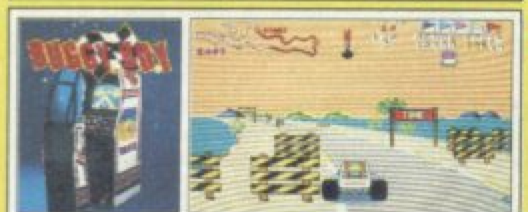
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Do you already own a computer
If so, which one do you own? ....

Where worlds collide

GURPS
(GENERIC UNIVERSAL ROLE-PLAYING SYSTEM)

Softback book
Steve Jackson Games, £12.95

A bleak landscape dotted with peasants, each struggling to make a living from the barren land. A rough road leads past them to the horizon, losing itself in the foothills of a mountain range which stretches far into the clouds. A ragged bunch of adventures, armour clanking, trudge their weary way toward the farm in the hope of finding a place to spend the night. Suddenly, as if from nowhere, a spaceship emits a roar of retro-fire and ploughs into the newly-sown field. A moment passes, steam billowing from where the hull of the ship touches the damp soil.

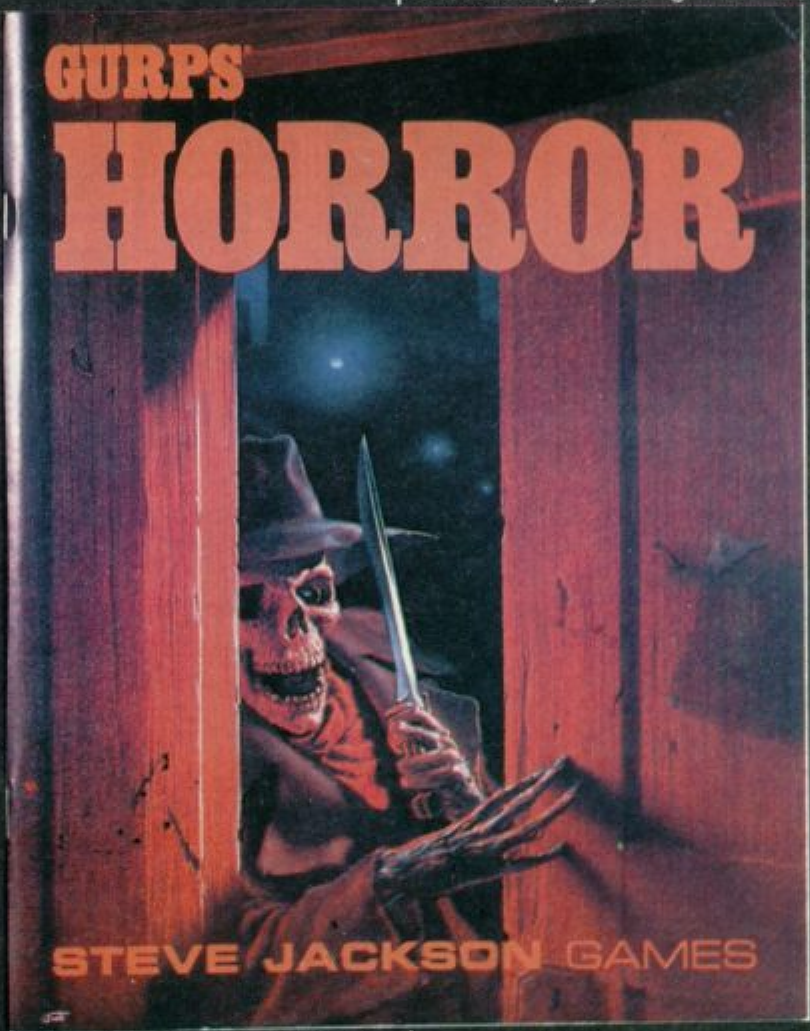
Two RPG genres have just collided! Nearly all role-playing games are designed with a particular setting for their adventures firmly in mind, often a very specific one such as RuneQuest's *Glorantha* or *Traveller 2300*'s highly detailed future earth. There are two main advantages to creating a system that is so strongly tied to a particular world of adventure - the players and referees can be provided with a good supply of background detail to bring the setting to life, and the rules of the RPG will automatically suit the skills, weapons, technology, magic and so on of the chosen environment. But there are problems too with such an approach. Players and referees have to know (and purchase) a new set of rules for each different campaign they wish to play, and – as suggested in my shaggy-dog introduction – it's no easy matter to transfer characters and ideas from one game to another.

GURPS is an attempt to obtain the best of both worlds by presenting a system of rules with detailed supplements to flesh out a whole range of settings from the Final Frontier of the future conquest of space to horror in 1890 London.

GURPS comes from US company Steve Jackson Games, also known for the hilarious *Illuminati* card game. For £12.95 you receive a huge rulebook, very clearly set out with a sprinkling of black-and-white illustrations, and that all too often absent essential of any RPG rulebook – a comprehensive index! The presentation really is impressively user-friendly, with anything not essential to the main part of the rules tucked away in columns of smaller print in the wide margins, making it much easier to pick out the basics, yet keeping the optional rules and additional examples together with the sections they extend or refer to.

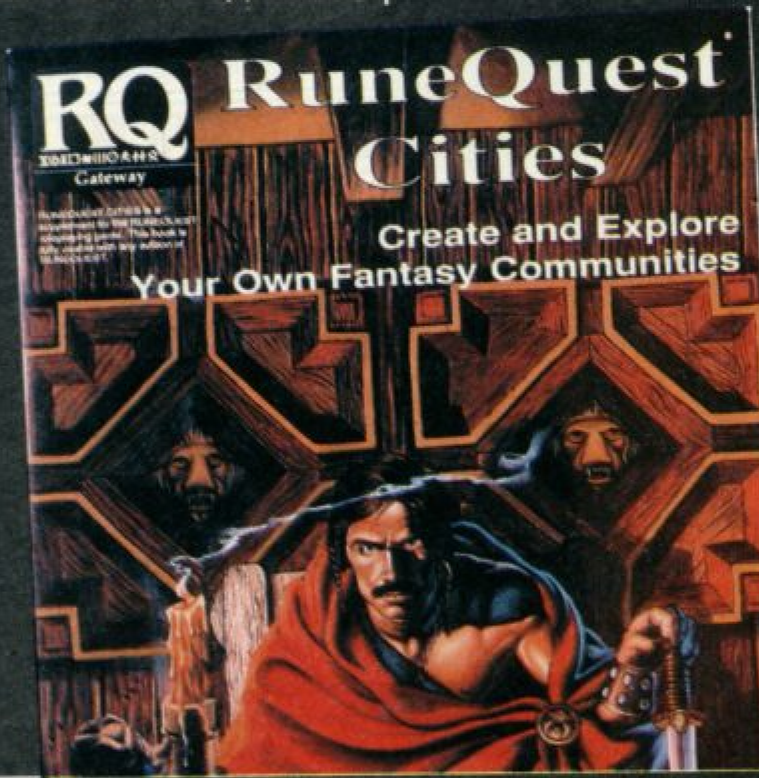
The rules include lists of skills available to characters covering almost any setting, including combat with anything from a club to a lightsabre, starship drive maintenance, shipbuilding, alchemy, nuclear physics and pretty well anything else you can think of. The combat system, too, is impressively comprehensive – a character in a fight has a range of attacking and defensive options available, such as all-out attack, fainting to distract an opponent and parrying a blow with a weapon. Also handy for new players are two introductory adventures: one for solo play, the other a scenario for 3-6 players.

As a Generic system, the *GURPS* basic rulebook doesn't include any background material as such. There are however chapters on the design of game worlds, covering such features as differences in technology and economics, and lists of weapons and equipment for modern and futuristic worlds. For more detail there are many *Worldbooks* available, costing around £5.95. *GURPS Horror*, for instance, gives new skills, magic, monsters, equipment lists and so on for spine-tingling adventures in Victorian England, prohibition America or the present day.



All in all, *GURPS* achieves its objective of presenting a system that can cope with just about any adventure you care to imagine pretty well. Inevitably referees will need more background material than is present in the basic set run any but the most superficial adventure, but whether such material comes from the *GURPS* worldbooks, other roleplaying games, novels or films or even the players' own imagination is unimportant – the *GURPS* rules can handle it. The system is simple to learn and play, yet realistic and detailed enough for the average gamer. If the idea of a generic system appeals, or you want a straightforward set of rules with which to run adventures in a setting of your own making, *GURPS* is worth a look.

Now a quick look at *Cities*, the latest of Avalon Hill's releases for its RuneQuest RPG. This 64 page booklet is bursting with streetlife of all forms: beggars, aristocrats, slaves, spies, thieves, magicians, bureaucrats, gypsies and even gods. Suitable for use in any fantasy setting, the booklet will be of enormous help for any gamesmaster wanting to run adventures in an urban setting. As well as extensive tables of suggestions for encounters players might run into, ranging from a potentially deadly run-in with an assassin to a smelly meeting with discarded dish water, there are pages of advice for designing and populating your town or city and some very useful tables that allow characters to pass their time in profitable employment during adventures. A useful product for any fantasy system, but as with other products in the series a little pricey at £7.95.



READERPAGE

"Despite all the technical advances in the last seven years, what is really missing in computing is the originality of the early days"

Paul Stanley is just one of many who, fond of nostalgia, argue that the new breed of computer games just aren't as *fun* as their predecessors

THE GOOD OLD DAYS

Dear Games Machine
When I was first introduced to computing I was only ten years old. I was given a ZX81 as a present and, despite the fact that it only had a small memory no sound and no colour, it was fun! Games such as *3D Monster Maze* and *Flight Simulation* were really exciting to play, in many ways more so than some of the recent releases on the high powered 16-bit machines (I currently own an Atari ST).

Releases on the ZX81 were always eagerly anticipated, as almost invariably they broke new ground in computing. Nowadays however so many games seem to be the same, such as many shoot-'em-ups which involve simply blasting everything in sight whilst looking at pretty graphics.

Despite all the technical advances in the last seven years, what is really missing in computing is the originality of the early days, so games such as *Carrier Command* deserve all the success they get.
Paul Stanley, Rainham, Kent.

ALIEN HORROR

Dear Games Machine,
I am writing to you as an Amiga mum. A mum who would like to strangle Dear Nige alias Nigel Palmer (TGM 011) whose letter earned him £40 worth of software and convinced my son to purchase his by mail order from Holmesoft.

Cautionary parental advice was thrown to the winds in view of Nige's fulborne praise for Holmesoft, but he's now £16.95 worse off and I'm dreading my phone bill.

He ordered *Alien Syndrome* and in the days preceding its arrival treated me to gruesome descriptions of the creatures about to take over his existence. At last the day arrived and there it was stuck in the letter box in the sunshine but the storm clouds soon followed - it would only load to level one. However, all was not lost after one weeks patience its replacement arrived or at least a part of it did, because the guys to be rescued didn't come along – perhaps they fell out of the envelope somewhere between Dudley and Leeds. After lots of phone calls and having the game checked and confirmed as faulty at a local computer store, Holmesoft were finally persuaded to send the replacements replacement, and, yes you've guessed it, it only loaded to level one!

Trading Standards are now involved in the whole mega mess as having returned the game once again we have no refund, no replacement, nothing!

So Nige, cause problems for your own long suffering mother next time or take up stamp collecting!
Mrs Susan 'turn that computer down' Young, Leeds.

P.S. I may have written this letter with some tongue in cheek humour but I do feel very angry that younsters should be used in this way. I was prepared to try and help my son though it got us nowhere and has probably cost me the same amount again. But many parents won't be prepared to loose more money trying or waste the time I have on these people.

LONGING FOR MSX

Dear Games Machine,
Your magazine is just perfect, except that there's not enough MSX coverage. The MSX computer is better than every one thinks – there are more than 2 million in Japan alone and in Holland 300,000 MSX 1's and 45,000 MSX 2's.

The MSX 2 in particular is a magnificent computer. Can't you compare, for example, *Bubble Bobble* on the MSX with the Amiga version? And what about MSX CD? For £33 pounds you can buy a disk with 30 games on it.

Just to keep you interested, think of all these lovely titles!
Out Run (MSX 2, 2 meg)
Operation Wolf (MSX 2)
Arkanoid 2 (MSX 2)
Bubble Bobble (MSX 2)
Afterburner (MSX 2)
1942 (MSX 2)
Metal Gear (MSX 2)
Rastan Saga (MSX 2, 2 meg) *Space Harrier* (MSX)
Dragonslayer 2 & 4 (MSX 2)
Harry Robbertsen, Holland

CHARITY DO

Dear Games Machine,
In accordance with the recent BBC Children In Need Appeal, five people, including myself, raised £150 using computers. Alan Anderson, Kevin Feely, Jeremy Hardern, James Hoskin, David Robson and I all participated in a sponsored 24 hour computer games playing event.

We would like to thank Paul Sutton at U.S.Gold, Marcia at CDS, Kim at Incentive, Elite Software and Gremlin Graphics for their co-operation in this event. All of these companies donated over £350 worth of software for this event, so again thank you.

Apart from giving credit, this letter is intended to give inspiration for other charity events using computers, but please don't just use it as an opportunity for free games. At this rate, who knows what might happen – we may even loose our image of being 'spotty teenagers' or 'a front for drug abuse'.
Grant Robson, Renfrewshire.

DEFINITIVE TGM

Dear Games Machine,
I am one of those many consumers who stalk the magazine racks of the local newsagents in search of a definitive guide or quality publication, normally when concerned with a new field of interest, in order that one can be enlightened sufficiently prior to making the important first-time investment decision. To give you an example, I would turn to *What Car* magazine for anything on 4 wheels and *Which Compact Disc* mag for info on digital paraphenalia! I strongly believe TGM offers that same important supportive information that one requires when researching or updating games machines and their software. It doesn't even need a pronoun like *what* or *which* to enhance its purpose in this trade.
K.S. Tham, Middlesex.

OVER PRICED

Dear Games Machine,
I must agree with many of your readers about the price of 16-bit games. It really is sheer madness.

I myself have a Spectrum but I am thinking of upgrading to an ST. While the average price of a Spectrum game is £8-£9, a 16-bit game can be anything up to £30. You could probably buy a second hand Speccy for that! Admittedly more time and effort goes into a 16-bit program than an 8-bit one, but 16-bit games are just 8-bit games with tarted-up graphics and sound. I'm not critisising them, but you must admit that most game play the same on all formats. So why the ridiculous prices?
Michael Clanny, Nottingham

KONIX DOUBTS

Dear Games Machine,
After reading about the new Konix games console in TGM012 and TGM 014 I have to say that I am rather skeptical about the whole thing.

I don't doubt that Amiga quality graphics are possible at £150. After all the PC Engine has arcade quality for a similar price. It's when I read claims of compact disc quality sound in stereo that I start to have my doubts.

However, the one thing to me that really seems unreal is the sub £100 hydraulic chair which, and I quote from TGM 012, is '*AfterBurner* style'. For £100 or less this would seem an impossibility. At a cost of £100 what sort of quality and reliability would the hydraulic chair be? I expect the repair costs, in the event of a fault, would be high as well.

If you add up the cost of buying the items that the Konix console 'emulates' (i.e. an Amiga, a CD player and a hydraulic arcade machine) you get a bill running into at least £3000. Konix are offering all these things for a tenth of the price.

If Konix can produce a 'home arcade' with Amiga graphics, CD quality stereo sound and a hydraulic system for around £300 that's reliable, they will certainly have my admiration.

I await the release of the Konix console with eager anticipation.
Scott Burgess, Ayrshire.

CONSOLES

Dear Games Machine,
What I've always liked about TGM is its coverage of consoles. I was one of the thousands of owners with an Atari VCS in the early eighties. Since then I've owned a Spectrum and an Atari ST, but I always find my way back to my good old VCS for a blast at *Defender*. Although computers have got much more powerful in recent years, computer games just aren't *fun* any more.

I recently purchased a Nintendo and found the games really fun to play – it was enough to take me back to the good old days of gaming when I sat up all night playing with my VCS. Now something else with superior graphics and sound has taken my fancy – the PC Engine (no, not that again!). If it's as good as it sounds, it looks to be a winner.

It's great to see consoles making a comeback, and I hope us console fans can count on TGM to bring us more info on the subject in the future.
Ashley Beeching, Kent.

PC OR NO PC

Dear Games Machine,
I really enjoy reading your mag because it's so much better than all the others. I used to read *C&VG* but now that I've seen TGM there is no other mag I will need to read again.

I own a PC and am very happy to find many game reviews for my computer in TGM, unlike many other computer magazines. I find now that many more games are coming out for the PC than ever before, although there are many more exciting and detailed games on the Atari ST.
Todd Savage, London SW15.

If you're interested in the PC Engine, you can't afford to miss next month's TGM where you'll find an *exclusive* Engine supplement detailing all available product *and* where to buy it.

AND MORE NOSTALGIA

Dear Games Machine
I'm pleased to see that the mag's got even better, witty, informative and well written.

It's a shame 16-bit software's not in the same state. I've got numerous titles for my ST and not one is worthy of my machine. Every one of them could be achieved on an 8-bit machine with a bit of effort. Pretty graphics and fast 3D are magnificent as cosmetics, but where are the *Paradroid*'s and *Sentinel*'s of the 16-bit era?

Now a moan about Novagen. I'm so sick of the *Damocles* saga and hype I'm having second thoughts about it when it comes out.

The series on Argonaut is excellent, keep it up TGM!
Nopquex, Dover.
What a sensible chap.

Send your letters to READERPAGE, TGM, *PO Box 10, Ludlow, Shropshire SY8 1DB.* With £40 worth of software up for grabs, you'd be an idiot not to.

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Wec Le Mans	6.75	10.50

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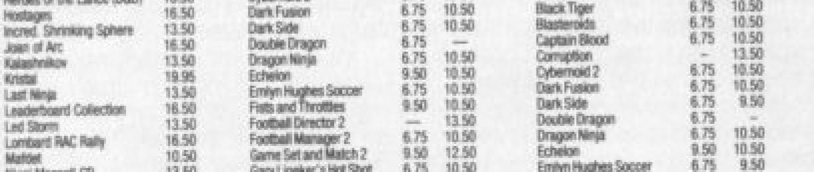
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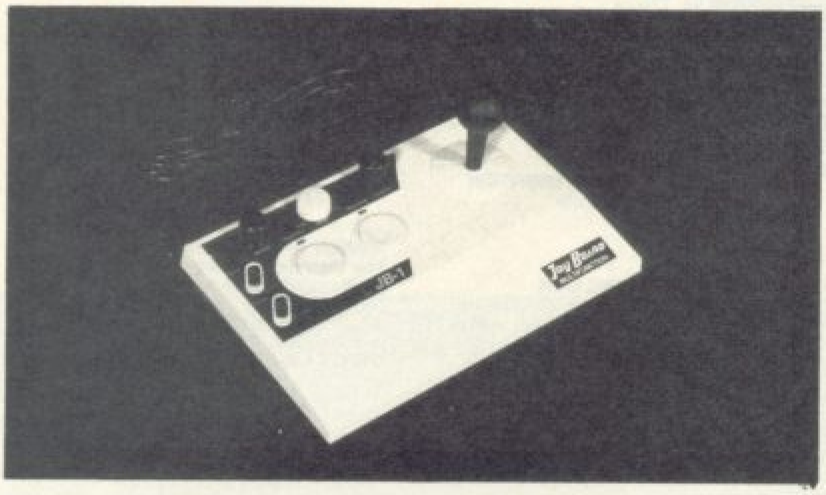
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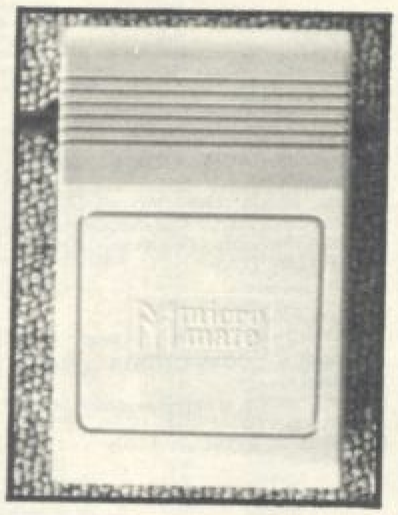
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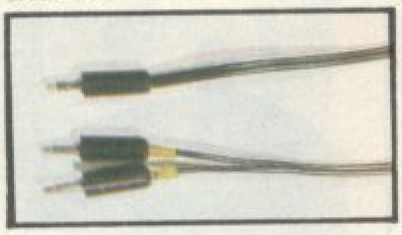
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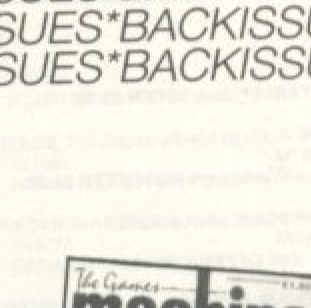
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the charts

CHRISTMAS ■ CHART-TOPPERS

1 **Operation Wolf** (Ocean)
2 RoboCop (Ocean)
3 **Ghostbusters** (Mastertronic budget)
4 Double Dragon (Melbourne House)
5 **Afterburner** (Activision)
6 Thunder Blade (US Gold)
7 **Through The Trap Door** (Alternative budget)
8 Giants (US Gold compilation)
9 **Falcon** (Mirrorsoft)
10 End Zone (Alternative budget)

Whatever happened to the high-fliers – *Afterburner* and *Thunder Blade* – in this Christmas of coin-op conversions? Despite massive hype, Activision's much-criticised shoot-'em-up with a fighter plane and US Gold's not-at-all-bad helicopter game failed to reach the giddy heights of the Christmas sales charts, compiled by research organisation Gallup.

Instead Ocean took the two pole positions with *Operation Wolf*, a tough and thoroughly satisfying blaster from the arcades benefiting from its first-person view, and *RoboCop* – a curious kind of coin-op game, because it was developed simultaneously with the arcade 'original'. The film's cult *and* commercial success probably helped.

Modest successes

Melbourne House managed to get *Double Dragon* into fourth place virtually without hype – a sign of what a good licence can do for sales – while their sister budget label Mastertronic astonished pundits with the success of the rerelease *Ghostbusters*. An old game, an out-of-date film . . . yet obviously plenty of pocket-money buyers knew who they're gonna call.



◆ *Stocking up:* **Christmas crowds choose coin-op conversions**

Further down the chart, another rerelease and a couple more budget titles scored, along with Mirrorsoft's 16-bit-only *Falcon*.

Other titles which didn't quite make the Gallup Top Ten, which refers to December 19-31 1988, were *R-Type* from Electric Dreams, Prism Leisure's *Football Manager 2* and Ocean's compilation *The In Crowd*.

A coin-op conversion, a sports management sim, a compilation . . . who said predictability was dead?

AND THE ■ LOSERS ARE . . .

Well, who dares loses at these kinds of sports. The response to TGM014's Epyx comp, where you were asked to design a sports game on the model of Summer Games etc, had us grinning inanely so long that we decided to print the winner plus the best of the rest.

The big winner is A Ward of Colwyn Bay, Clwyd (Suicidal Games), who receives an Amiga . . . runners-up receive copies of The Games – Summer Edition. Full list of winners: page 121.

■ SUICIDAL GAMES

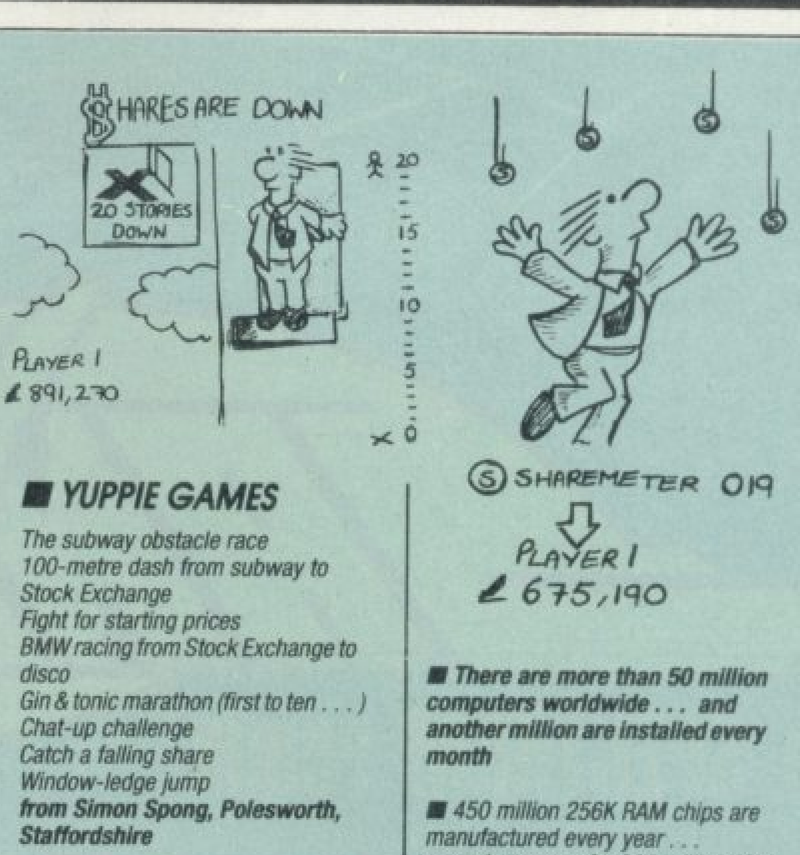
Cave swimming
Stampede running
Javelin-catching
The 100-kilovolt hurdles
Grenade tennis
Crocodile pit-leaping
The flaming high jump *(top bar drenched in blazing petrol)*
Minefield vaulting *(Robin's tip: be careful not to plant your pole on a mine)*
from A Ward, Colwyn Bay, Clwyd

■ GOAT GAMES

Butt the Welshman
100 metres trot
Milk the goat
Grass-chewing
Shearing
Bavarian goat cross-country
Thai goat boxing
Morris dancing
from Stephen Harcourt, Harlow, Essex

■ GREAT MOMENTS IN HISTORY

The Battle of Hastings *(aim for that eye!)*
Stonehenge weightlifting
The Henry VIII wife marathon
Swimming the channel
The Berlin Wall high jump
Invading France *(long jump from a boat – watch out for a budget Dunkirk clone)*
Spacewalk hurdles
Titanic swimming challenge
This winner missed out his/her name – please send it to TGM.



■ YUPPIE GAMES

The subway obstacle race
100-metre dash from subway to Stock Exchange
Fight for starting prices
BMW racing from Stock Exchange to disco
Gin & tonic marathon (first to ten . . .)
Chat-up challenge
Catch a falling share
Window-ledge jump
from Simon Spong, Polesworth, Staffordshire

VERY ■ LARGE ■ NUMBERS

■ *Every year £30 billion is spent on computer software worldwide*

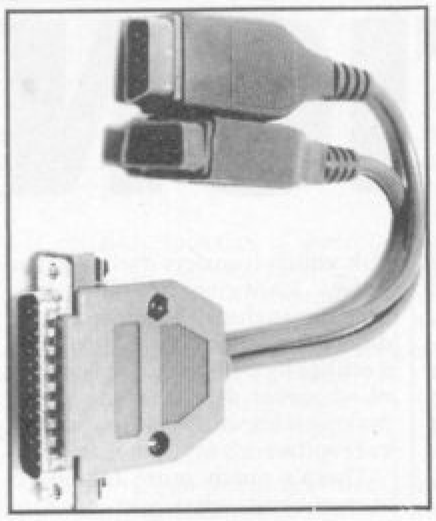
■ ***There are more than 50 million computers worldwide . . . and another million are installed every month***

■ *450 million 256K RAM chips are manufactured every year . . . enough memory for 225 million STs!*

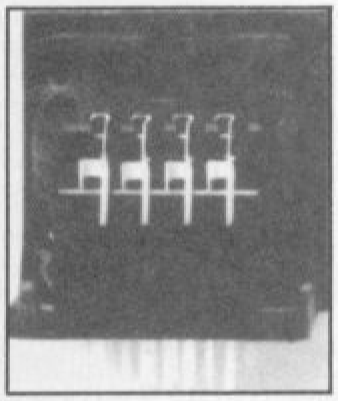
■ ***A laser reading information from a CD-ROM disk travels almost three miles***

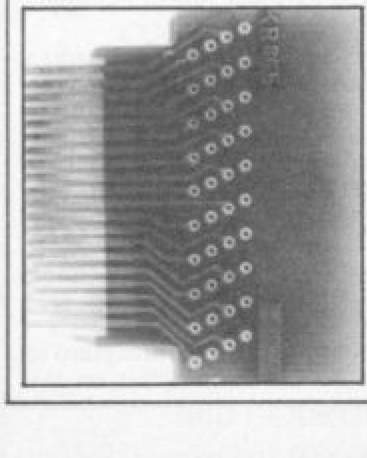
SOURCES: 1 US Government, 2 British Olivetti, 3 Financial Times


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BACK BYTES





CONTENTS

PRESS ANY KEY

INFORMATION DESK

Music questions make the biggest noise in this month's Information Desk, as our Back Bytes staff answer your enquiries

Desperately seeking synth links

I own an Amiga and a Yamaha PSS 480 synthesizer and wish to link them together, so I can write music on my Amiga and play it back on my synthesizer. Could you recommend a peripheral which would allow me to do this?
Roger Macias, Gibraltar

MIDI – Musical Instrument Digital Interface – is what you need. MIDI is not a particular product, but a standard which allows several musical instruments to be linked together or to a computer so that everything is controlled from one source.

Datel's Midimaster is a standard MIDI interface with with one in port, one through port and three out ports – more than enough for most musicians. Of course, you'll also need software to get the most out of your MIDI link-up. Watch TGM for a review of Amiga music programs in the next few months.

Midimaster costs £34.99. Datel Electronics are at Fenton Industrial Estate, Govan Road, Fenton, Stoke-on-Trent ☎ (0782) 744707.

I own a C64 and would like to link it up to a synthesizer. What hardware or software would I need to turn my C64 into a tapeless music studio?
Parys Jon, Belgium

Like the writer above, the first thing you'll need is a MIDI interface. Datel's MIDI 64 contains all the necessary ports to link your C64 to a synthesiser, and at £29.95 it provides excellent value for money. Datel's address is in the item above.

Then you'll need software. There are several good packages available for the C64, including Rainbird's *Advanced Music System* (£39.95).

Rainbird can be contacted at *first floor, 64-76 New Oxford Street, London WC1A 1PS* ☎ (01) 240-8838.

Amiga sound sampling

Could you please advise me on a good sound sampler for the Amiga A500?
Andre Rosso, Reading

Trilogic make a good low-cost model, the Amiga Audio Digitiser. Housed in a small box, it is designed to work with most sampler software, such as *Audiomaster* and *Prosound*. It costs a mere £24.99 and you can contact Trilogic at *Unit 1, 253 New Works Road, Bradford BD12 0QP* ☎ (0274) 691115.

Datel's Amiga Pro Sampler Studio is more expensive at £69.99, but includes its own software. Also, samples can be saved in IFF format, which is the standard used by many sample packages. Also included is four-track sequencer software.

I own an Amiga and the Aegis Sonix music program. The program is excellent, but the number of instruments is rather limiting. I was thinking of buying a sound sampler to rectify this. Can I use samples from the sampler within the Sonix program? Would I need any additional software?
Anthony Hicks, Kingsdown

There are several low-cost samplers available for the Amiga, but you'll need extra software to be able to use the samples with *Sonix*. The £125 Future Sound sampler for £125 includes all the software necessary to use customised samples within *Sonix*.

Virus fears

I've just bought an Amiga and have heard about an Amiga virus. Could you please explain what this virus is and how I can avoid it?
David Hall, Wickford

The virus is a short program on a disk which transfers itself into the Amiga RAM when that disk is used. It can then lie dormant while disks are swapped. Sooner or later, it strikes by damaging the boot file of whatever disk is in the drive, making it impossible to load whatever software's on that disk.

There's much more to say on viruses, and what you need to know is on page 100 of this issue. Suffice it to say, however, that there are several reliable ways of avoiding viruses, and as long as you're careful they don't pose a great threat.

Two more things may put your mind at rest. Firstly, it's very unlikely that a virus will physically damage your computer (though it's technically possible; again, see page 100). Secondly, a computer virus cannot harm humans – yes, some people *do* believe that!

16-bit miscellany

1) Will a 512K RAM expansion card make the Amiga A500 compatible with Amiga A1000 software, and if so where can I get hold of one?

2) What DTP packages are available for the Amiga? Are Mirrorsoft planning a version of Fleet Street Editor for the Amiga?

3) Is there likely to be a boom in Amiga software and hardware during 1989, and will it ever overtake the Atari ST?

4) Will software houses take advantage of the ST Plus's enhanced graphics and sound capabilities?
Samuel Flanagan, Horncastle

1) Since the A1000 had only 256K RAM, the A500 will already run all A1000 software. However, a RAM expansion is necessary to run programs designed for the A2000. Commodore manufacture their own expansion card, the A501, priced at £149.95. You can contact Commodore on ☎ (0628) 770088.

2) There are few DTP packages available for the Amiga – anyone considering DTP as their main use for a computer is strongly advised to go for a PC-compatible or, at greater expense, one of the Apple family.

Professional Page, a Canadian import costing £250.70 from TriComputer Software, is one of the more powerful – though you need at least 1Mb RAM to run it (that's where the A501 card comes in handy!). Full specs were given in TGM**013**; contact TriComputer Software at *161-169 Uxbridge Road, Ealing, London W13 9AU* ☎ (01) 840-6136.

Mirrorsoft have no firm plans to release *Fleet Street Editor* on the



Amiga. It wouldn't surprise us, given that it's already out on five formats including ST and PC, but on the other hand it may seem a trifle outmoded. DTP has developed greatly in the past couple of years.

3) It certainly looks as if there's going to be an increase in Amiga software, as sales of the computer itself are on the up and up, but as to overtaking the ST . . . our guess is as good as yours. Does it matter? (And please, Readerpage doesn't need replies to that!)

4) Atari have yet to confirm the existence of the rumoured ST Plus, but a spokesperson for Atari said that they're 'always looking for ways of increasing power and value for money of our computer range'. Think of that what you will . . . but bear in mind that Atari are very good at talking about products before they're completed, let alone released.

What a PD

I own an Atari 520 STFM. Could you please tell me where I can obtain public-domain software?
Michael Gravelle, Blackheath

Send an SAE to McSoft, *21 Purbrook Road, Tadley, Basingstoke, Hampshire RG26 6PR* for a list of public-domain software and prices.

Disk doubts

As a C64 disk user, I'd like to know whether it's true that Amiga disk drives are also slow, and that they have no directory or catalogue function!
CA Hester, Bradford

To avoid endless letters from outraged Amiga users, let's just say that the Amiga drive is not the fastest around! This can be irritating when you're using utilities that need frequent disk access, but for games which load as a whole – or level by level – it really only means a few seconds extra.

The Amiga does have a directory function, in the CLI (Command Line Interface) – part of the system which loads from *Workbench* but involves typed-in commands rather than mouse and icons.

Both LIST and DIR will do the job (LIST gives more detailed information).

The one problem is that with a single-drive system, you have to know the disk's volume name, so that when you remove the *Workbench* disk and insert the one you're interested in, the operating system is sure it's got the right one! It's a bit of a hassle.

With a second disk drive, however, you can simply leave *Workbench* in one drive, put the desired disk in the other, and access it using the drive number.

PCW power?

I am interested in buying an Amstrad PCW8256 or PCW8512, but I don't know how much data the disk drives can take.
David Linford, Horley

We're not sure whether you mean how much data the *disks* themselves can store, or how much they can load into the system before it fills up. So we'll answer both questions.

The 8256 disks can take a total of 360K, 180K on each side – as much as the standard ST and most PCs (however, you do have to physically turn the disk around to access the second 180K!).

The 8512 is an odd beast in that its two drives take different-size disks – they're the same 3-inch things in appearance, but drive A behaves like an 8256 drive while drive B takes disks with 720K capacity which *don't* have to be turned over.

It's probably a case of Amstrad bolting on a second drive but not wanting to make expensive changes to the original 8256's design . . .

The memory of the machines – ie the amount of programs and data they can handle at one time – is explained by the names: the 8256 has 256K, the 8512 512K.

Incidentally, we think that for the business or programming user, they're fine computers, if a tad expensive.

Unravelling upgrades

I have had an ST for about six months, but now with some extra money I'm wondering if it's worth trading in the ST for an Amiga or even a PC. What do you suggest? Are the Archimedes, PC and Amiga actually better than the ST, as their higher prices imply?
David Schoenberg, Dumbarton

We seem to be spending all month avoiding the great ST/Amiga dispute, but here goes . . .

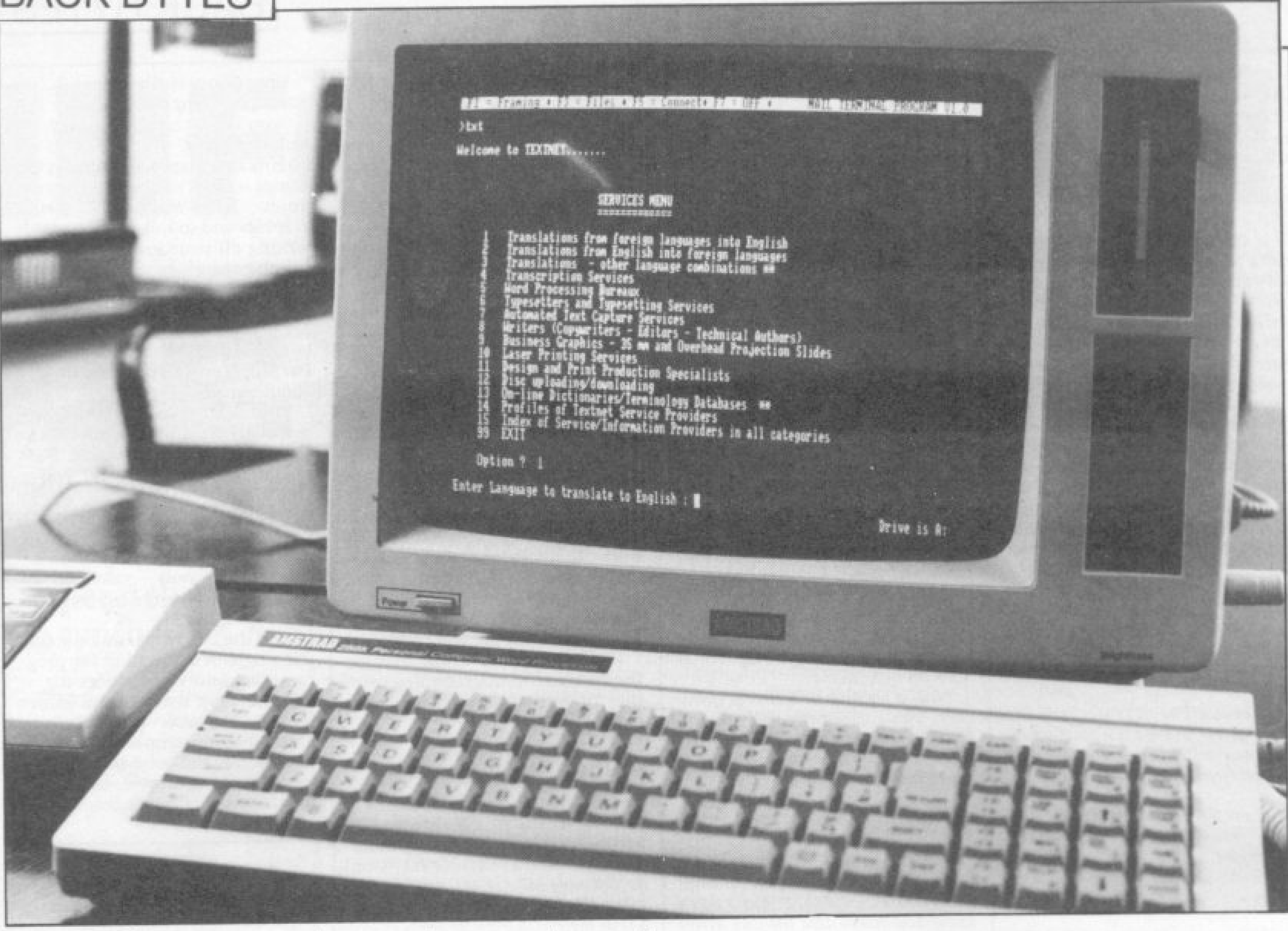
Upgrading really depends on what you want the computer for. If you're interested purely in games-playing, the ST is to all intents and purposes as good as the Amiga – okay, so the Amiga sometimes has marginally better graphics and sound, but is it worth writing off your investment in ST software just for that?

The ST is undoubtedly ahead of the Amiga in music software, because of its built-in MIDI port, but the Amiga leads in art utilities. For programming pursuits, they're about equal.

The other two machines you mention are unlikely to be the right choices for a typical TGM reader (though who said you're typical?).

Though the Archimedes is a very fine computer for its price, the range of software is very limited – it's really only suitable for advanced programming or scientific applications.

And the PC, while undoubtedly the single best machine for programming and word processing, is still the ugly sister of the games world. It's also, generally, an expensive machine to run – peripherals and good software are pricey because they're sold mainly to businesses rather than individuals.



Fun with filenames

I use an Amstrad PC1512 for producing a user-club newsletter, writing essays etc, and I am constantly having trouble with forgetting the filenames of old files which I haven't touched for a while. Is there any way to keep an index of the disks with notes attached, apart from writing it all down?
Martyn Watson, Hull

A surprisingly little-known but very useful feature of MS-DOS is the > output director, which sends the output of a command such as DIR or CHKDSK to a text file rather than the screen.

So to get a text file of a floppy-disk directory, simply type (with the disk in drive A:) DIR A:>FILENAME. FILENAME can, of course, be any name up to the usual limit of eight characters before the full stop and three after.

You can then view and edit FILENAME as an ASCII file.

Another way to keep track of what's what is to use logical filenames! The suffix (the bit after the full stop) is particularly useful here – you might want to put .LET after all letter files, .NOT after files of notes, .ESS after essay files, etc.

For example, on TGM (where most of the writing is done on systems running MS-DOS or the rather similar CP/M), we always put the issue number as the suffix. This answer is in the file INFO2.16, meaning it's the second file of Information Desk in TGM**016**.

Sensible filenames are essential whenever you've got large amounts of data floating around, whatever the system – who wants to plough through acres of files called THURSDAY and JOHNFILE and ODDBITS?!

Awed by the Amiga? Stuck with the ST? Muddled by MSX? Pretty confused by PCs?

This has been something of an Amiga month at Information Desk, no doubt thanks to all the new users Santa brought. But we handle queries about all micros, even the few TGM doesn't normally cover.

So send your computing questions to Information Desk, TGM, PO Box 10, Ludlow, Shropshire SY8 1DB.

Nearly all questions are answered sooner or later – even if it's in a reply to someone else's letter. So it's not really all that bad that we can't give replies by post or phone, is it now?

Correction

Will the real Atari please stand up?

Last issue, TGM Report inadvertently published a picture of the Atari ST alongside a story concerning Atari Games's American lawsuit against Nintendo.

In fact, ST manufacturers Atari Corp have no connection with Atari Games and are not involved in the lawsuit. We apologise to both Ataris for this error, which occurred because of an oversight in our production department.

COMPUTER VIRUSES

FANTASY OR THREAT?

To their victims, they're a nuisance – or a disaster. To their perpetrators, they're a bit of a joke – or a cruel way to wreak revenge. And to the quality press, they're an excuse for publishing scare stories while still sounding serious.

Probably because of their name and the inevitable connotations of an electronic AIDS, computer viruses have gained a notoriety beyond their real threat. In fact, because of their nature, they pose little danger to home-micro owners; because viruses have to travel from one file to another, they're most damaging when many files are accessible at once, either through linked computers (as in large business installations) or on hard disks.

Contrary to popular belief, viruses are not *necessarily* harmful – they don't all work by wiping out files. The definition given by Ralf Burger, author of *Computer Viruses: A High-Tech Disease*, is as follows:

> *A program must be characterised as a virus program if it combines the following attributes:*
> *1) Modification of software not belonging to the virus program by binding its program structures into these other programs.*
> *2) Capability to execute the modification on a number of programs.*
> *3) Capability to recognise a modification performed on a program.*
> *4) The ability to prevent further modification of the same program upon such recognition.*
> *5) Modified software assumes attributes 1 to 4.*

In other words, a virus is a program – usually a short one, to minimise the risk of discovery – that 'reproduces' itself by copying into other programs. These, in turn, then become viral programs and look for other uninfected programs into which they can copy the virus code.

Some viruses just carry on doing this for ever – like software pirates, the authors of these viruses are just showing off their own code wizardry and seeing how far the virus can get undetected. The only bad effect of such a virus is that it increases the size of programs and can thus make them slower to load or even too long to run.

(This is the reason for Burger's attributes 3 and 4: if a virus kept on infecting programs that had already been infected, their increased size would very quickly be noticed. It's also, one suspects, a way of keeping the definition of computer viruses close to that of organic viruses, which don't infect the same cell twice.)

Other viruses are lethal. Probably the most notorious is a PC virus that sometimes goes under the filename EGABTR – this erases everything on the disk and displays the message 'Arf! Arf! Got you.'.

Similar PC viruses, according to Burger, are DOSKNOWS, SECRET>BAS and VDIR.COM. Though they don't display the laughing message – which is little consolation – they make the disk unusable.

Of course, these viruses could quite easily appear with different, innocent-sounding filenames . . .

ST/Amiga viruses

Viruses can only work on disk-based systems, because they can't press the keys to start a tape running! So while PC and miniframe/mainframe viruses are the most common, the Amiga and ST are also likely victims.

The two best-known Amiga viruses are the Swiss Crackers' Association (SCA) program and the Byte Bandit virus.

The SCA virus, which is notorious but apparently harmless, sits in RAM and copies itself to the boot block of every disk that is inserted till the machine's turned off.

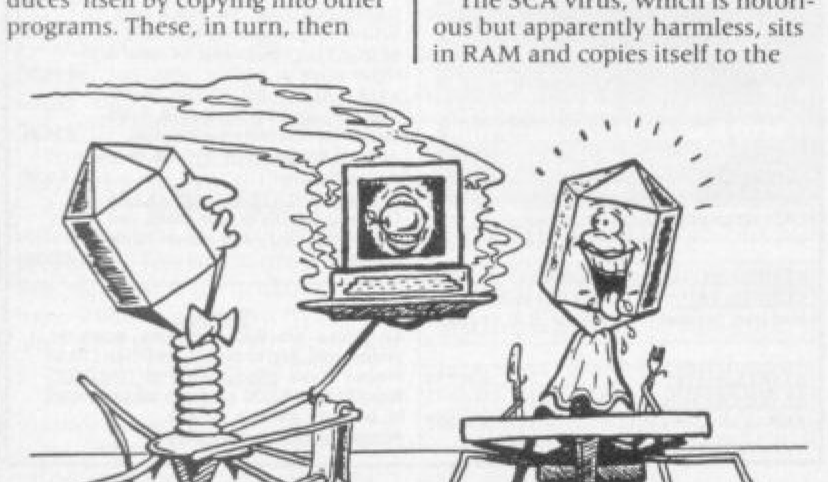
After 16 copies, it announces: 'Something wonderful has happened. Your Amiga is alive . . . '. Irritating, but not particularly dangerous; the data is left safe.

The Byte Bandit virus is more serious – it, too, copies itself to boot blocks, but instead of displaying a message it causes the system to crash and overwrites data.

ST viruses seem to be less common, though German programmers have even produced a virus construction set for the machine!

Any list of viruses is bound to be incomplete – there are probably still some out there that no-one (except the miscreant programmer) has noticed. But there are ways to look for viruses, and ways to stay safe – see the boxes Doctor, Doctor! and Miracle Cures?.

■ The technicalities of viruses are extremely complicated. For further reading, this general book is recommended: *Computer Viruses: A High-Tech Disease* by Ralf Burger, Abacus 1988, ISBN 1-55755-043-3. Though it's largely PC-oriented, what Burger says is applicable to all disk-based machines.



Binary pests: illustrations from Ralf Burger's excellent computer-virus book sum up the parallels with living viruses

Doctor, Doctor!

How to recognise a virus

Is your machine slow, listless, uninterested? Unexplained files on your disk directory? Disk drive making funny noises at the wrong times? If so, you may have a virus.

A virus may not be blindingly obvious till it's too late and a message saying 'all your files are destroyed' appears. So keep an eye out for the following symptoms:

■ Slow loading.
■ Programs that used to run okay now won't fit into memory.
■ Disk space fills up for no obvious reason.
■ Unexplained error messages.
■ Unknown files appear on the directory.
■ The disk drive performs a read/write operation when it shouldn't. (You can usually tell this by the light glowing, and by the sound of the drive moving.)

Miracle cures?

Because viruses come in so many different types, there's no one surefire cure. The safest method is prevention:

■ Keep disks write-protected (using the write-protect tab) as much of the time as possible.
■ Turn the machine off and on whenever possible – unless you've got a hard disk, the virus lives in RAM, so it has to re-enter the system whenever you reset.
■ Make backup copies of as many disks as you can (but remember it is *illegal* to make backup copies of software – even for honest backup purposes – unless the producer authorises you).
■ If you suspect a disk is virus-infected, do not use it at all – it's not true that you have nothing to lose, because some files on the disk may still be uninfected.

Contact the software house or an independent computer retailer for advice on virus-detection services (a high-street store is unlikely to be very interested).

■ In the worst case, if no virus cure is available, you must reformat the infected disks. This destroys all data on them – including the virus.

Fearless Amiga virus killer

Silica Shop sell a virus killer for £1.95 which will detect and erase many viruses from your disks. Silica Shop: *1-4 The Mews, Hatherley Road, Sidcup, Kent DA14 4DX* ☎ (01) 309-1111.

Hardware damage

Viruses *can* harm hardware. They do this by forcing the computer to perform an operation such as 'reading' part of a disk that doesn't exist, and thus damaging the sensitive disk-drive head.

Fortunately, these viruses are rare. If one does appear to have harmed your micro, do not use the computer again till you've contacted the manufacturer to ask whether the guarantee covers this damage.

If you know who originated this virus, or if someone passed it on to you knowingly, you may have a good case for criminal damage. Ask the manufacturer or a computer expert before calling in the police, however, as they're not likely to be impressed by a broken Amiga disk drive unless you have some hard evidence . . .

Thunderblade

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Eureka! Archimedes prints at pals

Archie fax

Okay, so we ain't much as punsters, but it's true – you can now send fax messages to your nearest and dearest for under £600, using your Archimedes to replace a fax machine.

An expansion card from Computer Concepts can convert both text and graphics files into fax data receivable by any group 3 fax machine (in practice, the machine at the other end is almost certain to follow the group 3 standard – most models of the do).

All fax images are shown in a window on screen where they can be edited before being saved as a fax file.

The Fax Pack card is available either with a 200 dpi (dots per inch– handheld digitiser for £918.85, thus converting the Archimedes into a complete fax machine, or without the digitiser for £573.85.

Computer Concepts: *Gaddesden Place, Hemel Hempstead, Hertfordshire HP2 6EX* ☎ (0442) 63933.

BBC utilities go 32-bit

Computer Concepts, (in)famous for their very successful Beeb programs which populate every college from here to eternity, have converted *Inter-Word, Inter-Sheet, Inter-Chart* and *Spell Master* to disk for the Archimedes; they were formerly only available in ROM format.

Address: see the Archie Fax item above.

Triple bill for Amiga programmers

HiSoft have released a couple of Amiga programming utilities at much the same time as Microdeal launch *GFA BASIC* for the machine.

First off is version 2 of HiSoft's *Devpac*, which is faster and easier to use, allowing access to both the assembler and debugger from the editor. It costs £59.95, while version 1 has been slashed to £15.

Meanwhile, *HiSoft BASIC* is being noted for its built-in compiler, its support for structured programming, and its full compatibility with *AmigaBASIC*.

Indeed, portability is the name of the game – *HiSoft BASIC*, which costs £79.95, is also compatible with *HiSoft BASIC* for the ST and Microsoft's *QuickBASIC* for the PC.

Microdeal's *GFA BASIC*, now moving from ST to Amiga, also supports structured (modular) programming well – but doesn't include a compiler.

HiSoft: *The Old School, Greenfield, Bedford MK45 5DE* ☎ (0525) 718181.

Microdeal: *PO Box 68, St Austell, Cornwall PL25 4YB* ☎ (0726) 68020.

■ Watch for reviews of both BASICs in next month's Back Bytes.

Modula-2 on the ST

Office rents may rise and fall, but for micro-owners the price of awesome organisation is now £2.99. Summit Software, a budget house launched last autumn by Alternative, have rereleased *Mini Office 1* for CPC, C64, Electron and Spectrum.

Previously costing £5.95 from Database Software, *Mini Office 1* includes a word processor, database and spreadsheet with a graphics-presentation program. We reckon it *must* be the cheapest all-in-one package around!

Summit Software: *Units 3-6, Baileygate Industrial Estate, Pontefract, West Yorkshire WF8 2LN* ☎ (0977) 797777.

Cheap 24-pin printer from Citizen

Citizen will launch a low-cost 24-pin printer at the *Which Computer?* Show, held in Birmingham's NEC February 21-24.

The £400-odd printer will have only the most basic features, but Citizen say the print quality is similar to that of more expensive models.

For a full guide to printers see Back Bytes, TGM**014**.

Citizen: *Wellington House, 4/10 Cowley Road, Uxbridge, Middlesex UB8 2XW* ☎ (0895) 72621.

Mini Office for mini money

Serious ST programmers will happily find £99.95 for HiSoft's *FTL Modula-2 Developer*. Included in this package, based on the structured language Modula-2, are:

■ The *FTL* Modula-2 compiler, on which the system is based.
■ A linker.
■ An assembler.
■ A copy of HiSoft's *WERCS* resource constructor (a *GEM* tool which lets you automate the production of menus, icons and windows).
■ A multifile *GEM* editor.
■ A high-level symbolic debugger/profiler.

Costing £99.95, the system is also available for MS-DOS and CP/M machines; Mac, UNIX, *Windows* and OS/2 versions are imminent.

Hisoft: *The Old School, Greenfield, Bedford MK45 5DE* ☎ (0525) 718181.

ST workbench?

Put your ST on the shelf – with a workstation from Company 55, designed specifically for the ST. A three-tier design constructed from tubular steel, it takes the monitor on the top tier and the keyboard on the bottom, and also includes a platform for the mouse. The cost? £55.

Company 55: ☎ (0494) 29075.



Correcting colour in Degas

Printouts of colour pictures can be a hit-or-miss affair – sometimes the printer misinterprets information from the computer, and the colours go awry.

Now *Degas Elite* users can correct colour printouts using *Colours* from Hat Software, a utility which keeps the printed image as close as possible to the screen display.

Pictures are loaded into the *Colours* program, where the colour codes are automatically corrected, then resaved and loaded back into *Degas Elite* to be printed out. Serious artists will love it at £19.95.

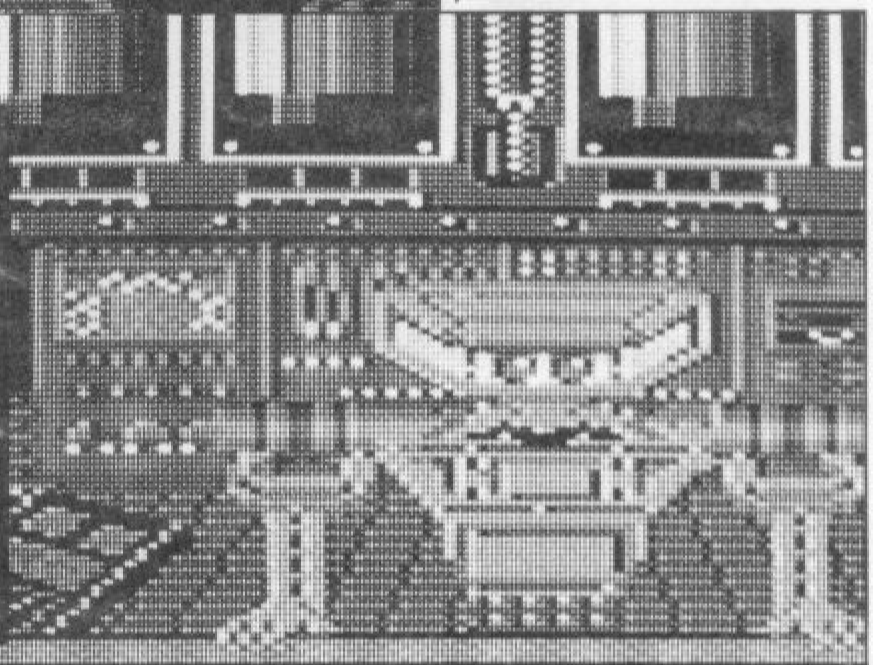
Hat Software: *21 Wyle Cop, Shrewsbury, Shropshire* ☎ (0743) 231763.

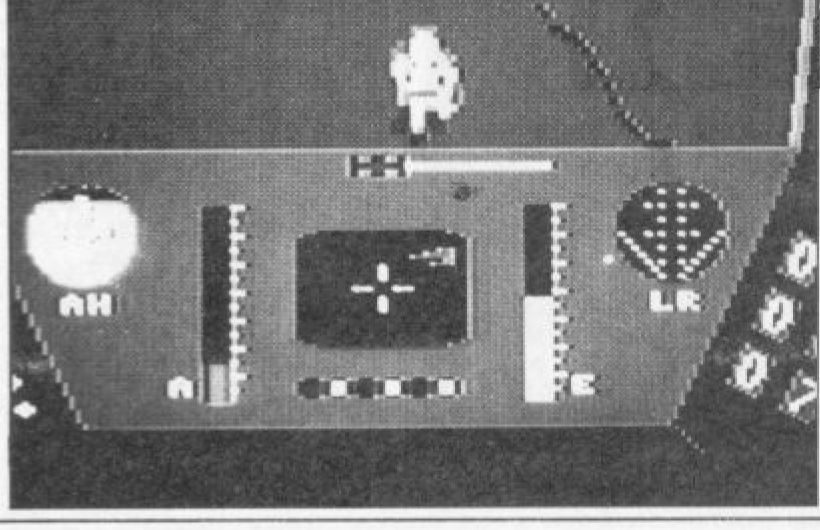
Rescue for Fractalless

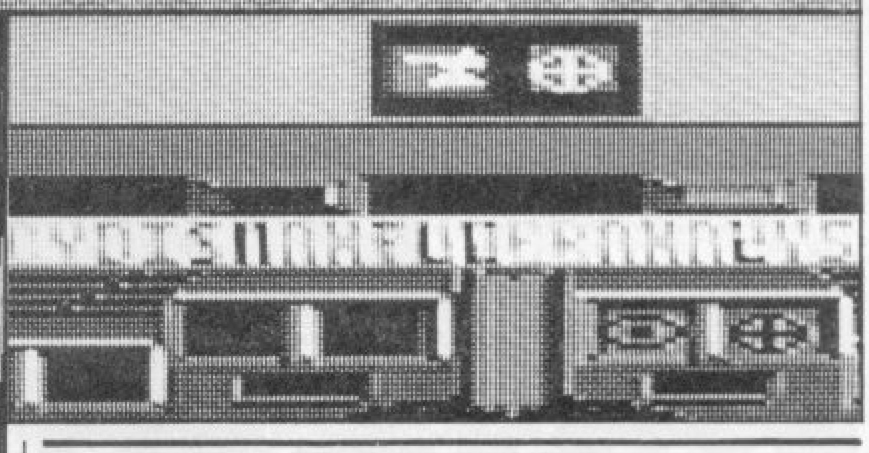
Practical fractalists should soon have their own magazine – *Fractal Report*. The proposed newsletter will feature programs for generating fractal graphics on home computers (including PCs), machine-code routines for particular processors, and general articles. There'll presumably be a fractal page 3 too.

Anyone interested in reading or writing for *Fractal Report* can obtain the first issue for free from John de Rivaz, *West Towan House, Porthtowan, Truro, Cornwall TR4 8AX*.

■ Much interest in fractals is mathematical, but they're not purely academic at all. Fractal graphics have been widely used in games by developers such as Lucasfilm, who made the technique famous with *Rescue On Fractalus*, *Koronis Rift* and *The Eidolon*, starting in 1986.







Computerised exam help

There's no need to pack away your computer as the GCSEs approach – Kosmos Software offer a range of programs to help you revise.

Subjects available include geography, history, French, German and Welsh, for Spectrum (cassette and +3 disk), CPC, BBC, Amstrad PCW and PC-compatibles, with conversions due soon for the ST. Presumably, C64 and Amiga owners are so smart they don't need to revise anyway.

Prices range from £4.95 to £19.95, depending on format. For a free 20-page catalogue contact Kosmos at *Freepost, Dunstable, Bedfordshire LU5 6BR* (no stamp required) or ☎ (05255) 3942.

GUIDE TO 16-BIT ART UTILITIES

Ever since man drew deer on the cave walls, he's been cursing the slow, laborious business of art (*'what do you mean hold and modify. Urg?* Thwack!'). But the latest generation of micro art utilities can take the pain out of painting with a variety of predefined, and user-definable, devices that create complex effects quickly.

This is a guide to the best on the Amiga and ST. We haven't included every package there is – only the front-runners – and we haven't strayed into related areas like desktop publishing (DTP) or computer-aided design (CAD) either, though both will be covered in Back Bytes. (For DTP details, see TGM**013**.)

For each package we've listed:

■ *SYSTEM REQUIREMENTS.* The hardware you need to get the program up and running.

■ *SCREEN.* The size of the screen measured in pixels, and the number of colours that can appear onscreen at any one time.

Higher resolutions allow for more detailed graphics, but they also require more memory (because there are more pixels in each picture for the computer to 'remember'). So the size of the palette tends to decrease as the resolution increases.

■ *BRUSHES.* Freehand drawing in an art utility is usually done with 'pens' or 'pencils', which are dragged around the screen with mouse (or occasionally cursor) commands. As they move, they leave a mark a few pixels wide, in the time-honoured style of manual writing implements.

A BRUSH GRAB command picks up a section of the screen and then uses it as a pen or pencil.

■ *EASE OF USE.* How easy is the program to handle? Do you need a degree in English to understand the manual?

Virtually all art utilities work in a WIMP (windows, icons, mouse, pull-down menus) environment, so there's no need to type in commands.

■ *USP.* Marketing jargon for 'unique selling point' – what distinguishes this utility from the rest of the bunch.

■ *TGM GUIDE.* What we thought of it. It's possible to create an outstanding picture on even the most basic of utilities, but sophisticated commands can speed up the process tremendously . . .

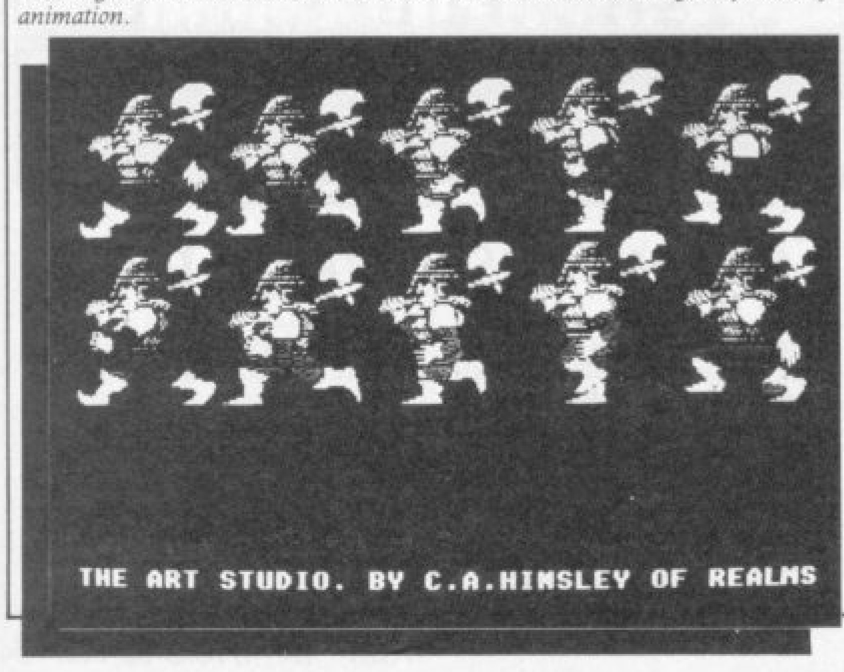
Sprites for sore eyes

PACKAGE **The Advanced OCP Art Studio.**
SYSTEM REQUIREMENTS ST, 512K RAM.
SCREEN 16-colour low-resolution mode only.
BRUSHES 8 preset brush shapes and sizes. Rectangular customised brush grab. Customised brushes can be flipped vertically or horizontally and rotated in increments of 90°.
USP Screens can be downloaded to other machines via the serial port. However, you must take into account the graphics capabilities of the target machine when designing a picture: the Spectrum will only accept monochrome pictures that do not exceed its screen size.

Font-designer, map-maker and sprite-animation commands are all included.
EASE OF USE All the options are on a separate screen from the work area, and are represented by rather ambiguous icons. But the program is surprisingly easy to use.
TGM GUIDE *The OCP Advanced Art Studio* is particularly suited for games design. The program seems more concerned with sprite design than complete pictures (Ocean use it for sprite design in games), and several commands which would be useful to the screen designer are missing. There are no shade or smear options, and the brush commands are rather basic.

Designed by Oxford Computer Products, this made its debut on the Spectrum; it was the first Spectrum software using a WIMP environment.
PRICE £24.95.
PRODUCER Rainbird, *first floor, 64/76 New Oxford Street, London WC1A 1PS* ☎ (01) 240-8838.

The knight animation demo that comes with Art Studio, showing ten frames of animation.



Budget buy

PACKAGE **Degas Elite.**
SYSTEM REQUIREMENTS ST, 512K RAM.
SCREEN 16 colours in low resolution, 4 colours in medium resolution and 2 colours in high resolution (a hi-res monitor is needed for that).
BRUSHES 15 preset brush sizes and shapes. Rectangular customised brush grab. Customised brushes can be rotated by anything up to 360°, flipped, tilted or stretched either horizontally or vertically and distorted.

DISTORT allows the user to move each corner of the block to a different position on the screen, thus changing the original image radically. Images can be folded over themselves using this command. However, the process tends to be rather slow. ***USP*** A font-editor program is included, to create your own typefaces. Pictures can be imported from an Atari 800XL, XE or Amiga if stored using the Electronic Arts file format.
EASE OF USE WIMP environment. Most functions can be accessed from a main menu, which is a separate screen from the work area. The manual is readable, and since most functions are represented by words rather than ambiguous icons the main menu is largely self-explanatory.
TGM GUIDE Contains all the essential functions such as a wide range of brushes and shapes, airbrush and an excellent zoom mode. *Degas Elite* is very easy to use and at little more than the cost of a game it certainly provides good value for money.
PRICE £24.95.
PRODUCER Electronic Arts, Langley Business Centre, *11-49 Station Road, Langley, near Slough, Berkshire SL3 8YN* ☎ (0753) 49442.



An example of the effects that can be created using Degas Elite's block manipulation commands.

Perfect introduction

PACKAGE **DeluxePaint.**
SYSTEM REQUIREMENTS Amiga, 512K RAM.
SCREEN Low-resolution only (320x200, 32 colours).
BRUSHES Ten built-in brush sizes and shapes. Rectangular customised brush grab. Brushes can be flipped horizontally and vertically; rotated through any angle; stretched or shrunk to any size; or bent horizontally or vertically.
EASE OF USE WIMP environment. The functions of some of the icons aren't immediately obvious but are soon learned.

The manual is fairly short for an art utility, but does give all the essential information on each option. However, it would have been nice if a few tutorials were included to familiarise first-time users with graphics techniques.
USP A good, well-presented utility in Electronic Arts's highly-regarded Deluxe series.
TGM GUIDE One of the first good utilities available for the Amiga. Several packages have surpassed *DeluxePaint* in terms of functions – including its little brother, *DeluxePaint II* – but it's still a good introduction to the world of

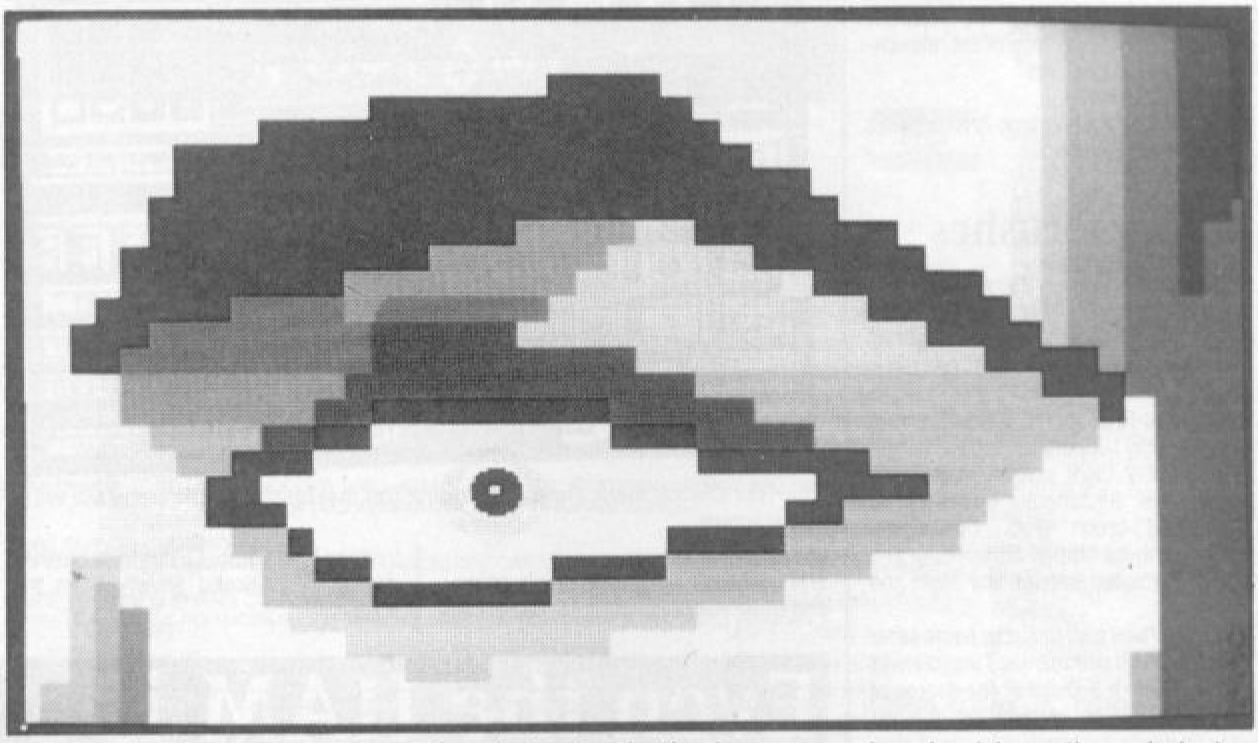
graphics.
PRICE No longer available new, but sometimes available as 'free' software when buying an Amiga. Or borrow it.
PRODUCER Electronic Arts, address under *Degas Elite*.

Amiga power

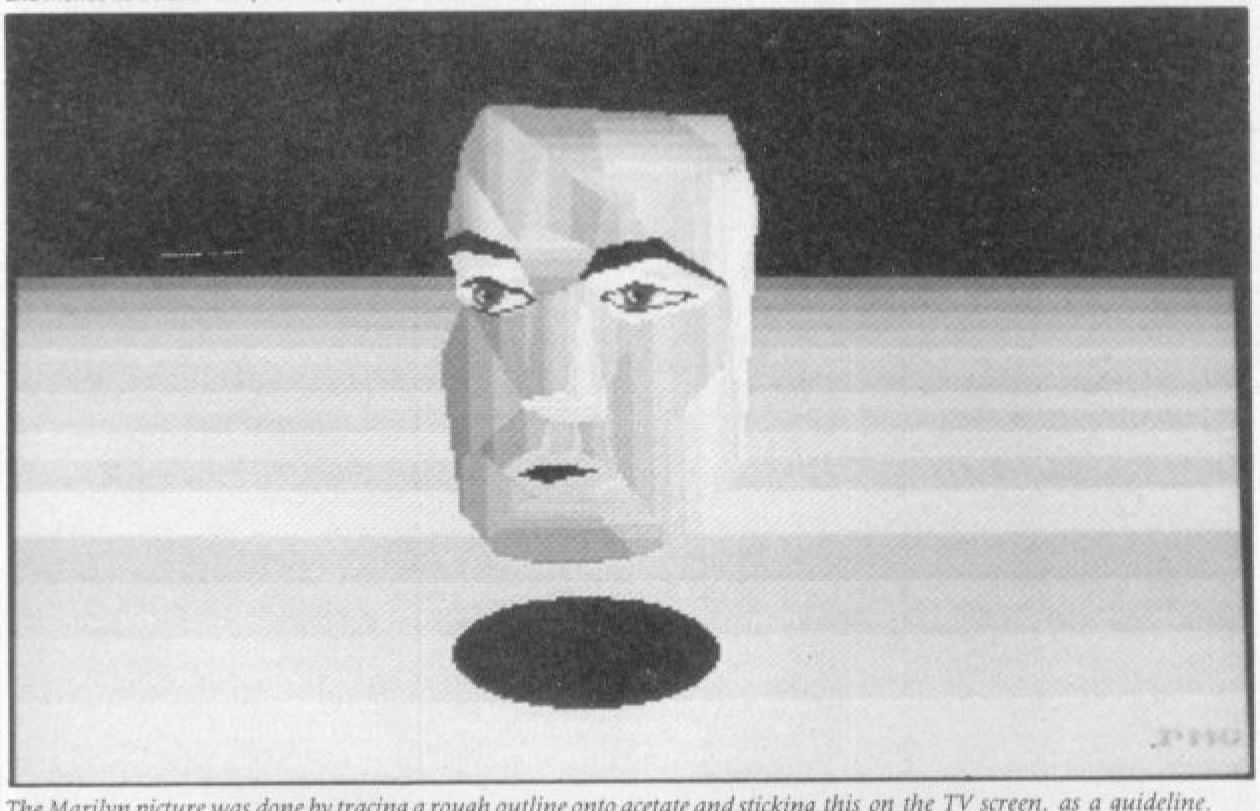
PACKAGE **DeluxePaint II.**
SYSTEM REQUIREMENTS Amiga, 512K RAM.
SCREEN Four modes are available: 320x200 (32 colours), 320x400 (16 colours), 640x200 (16 colours) and 640x400 (16 colours).
BRUSHES Ten built-in brush shapes and sizes. Rectangular customised brush grab. Customised brushes can be rotated through any angle; flipped horizontally or vertically; bent through horizontal or vertical planes and stretched to any size.

DeluxePaint II also includes a powerful perspective command. A customised brush can be rotated through its x, y and z coordinates to occupy a new three-dimensional plane.
EASE OF USE Uses the same icons and menus as *DeluxePaint*, but with additional commands. Tutorials have been included in the manual but it's easy to get lost in some of the detailed descriptions of functions.
USP There are several powerful commands: GRADIENT FILL shades and fills an area at the same time, while BLEND, SHADE and SMEAR all speed up the process of colouring.

DeluxePaint II is now sold with *DeluxePrint*, a cards/stationery layout system (TGM**015**).
TGM GUIDE Certainly one of the best utilities available for the Amiga. After a little practice *DeluxePaint II* is very easy to use; flicking through menus at speed soon becomes second nature. The commands are very powerful, and once mastered they save a tremendous amount of planning time in creating complex effects.
PRICE £69.95.
PRODUCER Electronic Arts, address under *Degas Elite*.



Sans Visage is a blow-up of one of the eyes from the Marilyn pic. The picture was recoloured and the pupil retouched using the CIRCLE *command. Sans Visage was drawn on DeluxePaint.*



The Marilyn picture was done by tracing a rough outline onto acetate and sticking this on the TV screen, as a guideline. The face was then divided into segments which were individually shaded using a restricted palette. Marilyn was drawn using DeluxePaint II.



Something Evil was created in black and white on Photon Paint, making extensive use of the brush and smear commands

Picture processing

PACKAGE **Deluxe Photolab.**
SYSTEM REQUIREMENTS Amiga, 1Mb RAM.
SCREEN Several resolution modes are catered for, ranging from 320x200 up to 640x400.

The A1000's Extra-Halfbrite mode is an option on some resolutions, effectively doubling the onscreen colour range to 64 by displaying two banks of 32 colours. The user specifies the contents of the first bank, while the second bank repeats the same colours but displayed at half their brightness.

HAM mode is also available.
BRUSHES 16 preset brush sizes and shapes. Rectangular and irregular customised brush grab. Customised brushes can be flipped vertically and horizontally, rotated through any angle or rescaled to any size.
EASE OF USE Experienced users of 16-bit art utilities will have no trouble operating *Deluxe Photolab*. First-time artists will have to learn the functions of each icon, but these are easy to grasp.

The manual is generally good except when it comes to explaining HAM. And nontechnical types may find talk of bitmaps a little confusing!
USP *Deluxe Photolab* includes three separate programs: *Paint*, *Colours* and *Posters*.

Posters is a layout system and printer driver which allows pictures to be printed out at any size. *Colours* is a colour-processing program: pictures can be changed from one display mode to another and elements from several pictures combined while the colour palettes are matched.
TGM GUIDE *Deluxe Photolab* is a complete picture-processing package, so some of the options are useless unless you own the hardware to exploit their facilities. For instance, the *Posters* program is largely redundant unless you have a high-quality printer.

The *Paint* program is good but not outstanding. All the basic functions are catered for, and there are some very powerful commands such as GRADIENT FILL and SHADE.

PRESS ANY KEY

As a whole the package is particularly suited to DTP applications or the retouching of digitised graphics.
PRICE £69.95.
PRODUCER Electronic Arts, address under *Degas Elite*.

Best for brushes

PACKAGE **Photon Paint.**
SYSTEM REQUIREMENTS Amiga, 512K RAM. However, 1Mb is required for certain resolutions and functions.
SCREEN HAM mode. Several screen sizes are also supported.
BRUSHES Eight preset brush sizes and shapes. Rectangular and irregular customised brush grab. Customised brushes can be flipped horizontally and vertically, rotated through any angle and resized.

Photon Paint also includes some other powerful brush commands. TWIST distorts the brush into a 3-D spiral; the degree of twisting is set by moving the mouse. WRAP-ON wraps the brush onto one of several 3-D shapes such as a cone, or any symmetrical freehand shape.

BEND distorts the brush through one of several directions, and TILT redraws the brush on a 2-D plane which is positioned in 3-D.
EASE OF USE The manual is excellent – some functions seem complicated, but they're covered in such depth and straightforwardness that using them is very simple.
USP Very powerful brush commands, and up to 4,096 colours onscreen.
TGM GUIDE The list of functions is impressive. The brush menu, in particular, has been developed to such a high level that creating astounding effects is simplicity itself. So if you use a lot of brushes in your pictures this is the utility to buy.

The only drawback is HAM. It's not always very easy to use and can result in nasty glitches on screen if you're not careful when defining your base colours.
PRICE £69.99.
PRODUCER Microillusions, *PO Box 3475, Granada Hills, California 91344, USA* ☎ 010 1 818 360 3715.

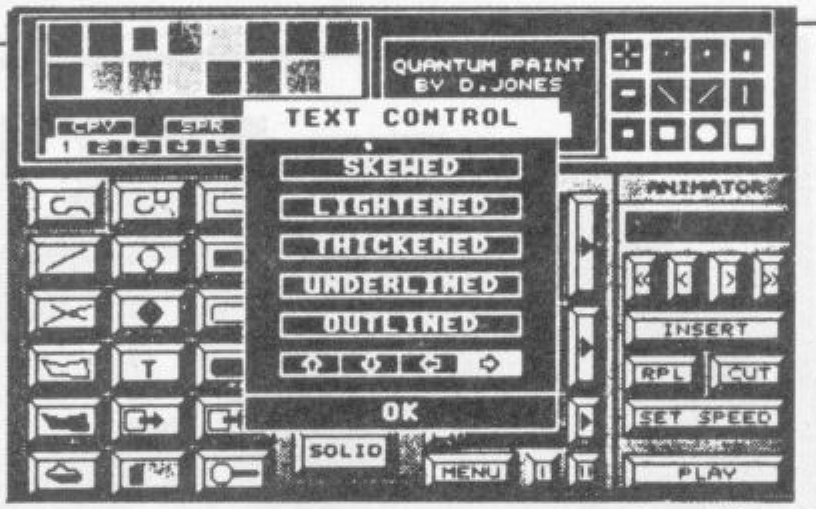
Coordinated colour

PACKAGE **Quantum Paint.**
SYSTEM REQUIREMENTS Atari ST, 512K RAM.
SCREEN There are four screen modes: in low resolution you can have 128, 512 or 4,096 colours, but medium resolution allows only 32.

This is a big improvement on the ST's normal colour capability of 16 colours in low resolution and four colours in medium resolution.

The new screen modes are created by specially developed 'wideband colour' routines in the program, which divide the screen into areas, each with their own palette. In the case of 128-colour mode the screen, is divided into eight areas, each with a different 16-colour palette.

But sacrifices must be made. The wideband colour routines take up extra processor time: in 32- and 128-colour modes this is only 5%, but can rise to 90% in 512- and 4,096-colour modes. Obviously graphics that take up 90% of the processor time cannot be used in games!
BRUSHES 12 preset brush shapes and sizes. Rectangular and irregular customised brush grab. Customised brushes can be repositioned anywhere on the screen.



The Text Control menu from Quantum Paint overlayed over the top of the main menu screen.

EASE OF USE Generally easy to use. All commands are located on a separate screen from the work area. Defining the extended palette presents no problems.
USP The new colour modes are definitely *Quantum Paint*'s selling feature. Also included is an animation program to create moving sprite sequences.
TGM GUIDE Colour is what this program is about. A little rough planning of your artwork is necessary to determine where you will need particular colours, but in practice it's far easier to use than HAM on the Amiga. However, an otherwise good program has been let down by underdeveloped brush commands.

When *Quantum Paint* is improved, Eidersoft will supply the new version to registered users for a £5.50 fee.
PRICE £24.95.
PRODUCER Eidersoft, *44A Stanley Street, Bedford, MK41 7RW* ☎ (0234) 273000.

Even the HAM is a bit plane

Hold And Modify (HAM) is a screen mode on the Amiga which allows all the machine's 4,096 colours to be displayed at once (on a still image, not in moving graphics!).

Normally, however, the Amiga in low-resolution and high-resolution modes can display any 32 colours onscreen from a range of 4,096. These colours are made out by combining red, green and blue (often abbreviated to RGB) in different strengths.

The machine defines the colours using **bit-planes**, which are like rows of memory bits, each bit representing one pixel on the screen. Each bit is on or off.

Of course, if there were only one bit-plane, there could only be two colours: on and off, or black and white. But if there are two bit-planes (let's call 'em A and B), each pixel could be one of four colours, represented in memory by 'A on-B on', 'A off B on', 'A on-B off', and 'A off B off'.

Three bit-planes make eight possible colours, four make 16, and five make 32 – so to display its usual 32 colours, the Amiga uses five bit-planes (astute mathematicians will have noticed that $32=2^5$).

Producing colour

So big deal. You've got (say) a colour represented by the five bit-planes as 'A on B on C off D off E on' – now how does the Amiga turn that into a coloured pixel onscreen?

Well, the actual definitions of the colours are stored in the 32 **colour registers** of RAM, and a quick mathematical routine using the bit-planes can come up with any number between 0 and 31, inclusive. This tells the machine which colour register to read; it then colours the pixel using its normal screen-colouring method.

(Geniuses will quickly see that, as each bit-plane is either on (1) or off (0), this can be done by taking the value of bit-plane n, multiplying it by 2^n, doing the same for bit-plane n+1, etc, and then adding together the products. Not that it makes *Phantom Fighter* any easier . . .)

The HAM trick

Ironically, HAM can only display all 4,096 colours by *copying* the RGB composition of the previous pixel on the screen!

It does this by using four bit-planes to give a value between 0 and 15 ($4^2=16$), and then reading another two bit-planes to find out whether that value is for a normal colour or a HAM colour.

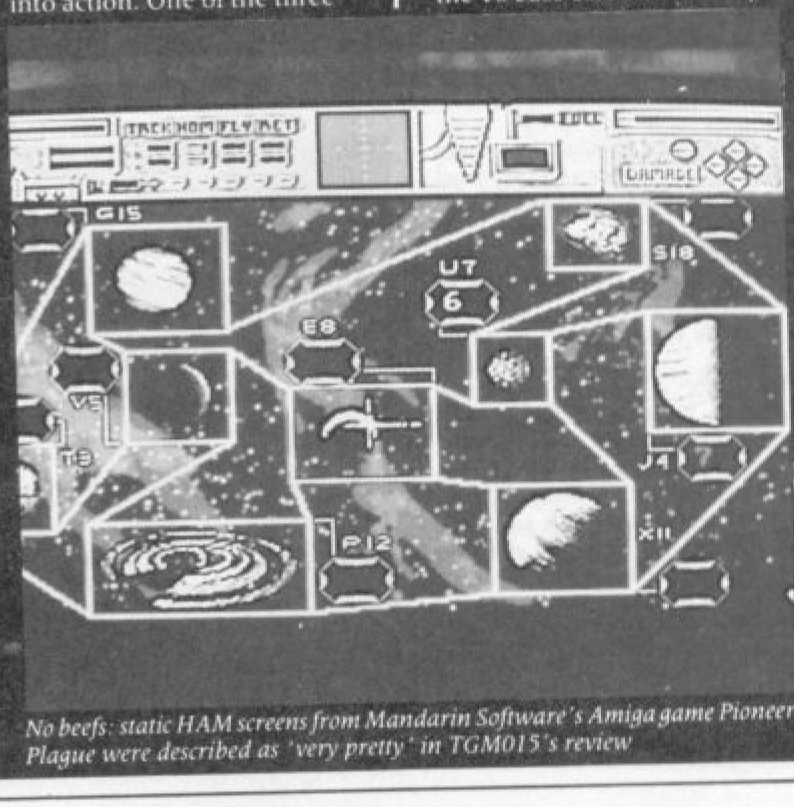
If it's for a normal colour, then one of 16 colour registers (**base colours**) is selected in the way described above.

But if those two bit-planes signify that it's for a HAM colour, a different system swings into action. One of the three RGB components carried over from the previous pixel is dropped, and replaced by a complete extra colour.

If the extra colour is to replace the previous green value, HAM mode will colour the new pixel with the red and blue elements from the previous pixel *plus* the entire contents of one of the colour registers.

This is the advantage, and the disadvantage, of HAM. Because each pixel can have any three of 16 base colours, the total number of combinations is 4,096 (16x16x16). But as only one of the three colour elements can change on each pixel, it can take several pixels' distance to change from one colour to a completely different one.

The complexity of HAM also makes it unfeasible for moving graphics, and to avoid getting tied in knots when using HAM it's very important to define the 16 base colours carefully.



No beefs: static HAM screens from Mandarin Software's Amiga game Pioneer Plague were described as 'very pretty' in TGM015's review

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GUIDE TO COMPUTER SYSTEMS

Most people know what they want in a computer, but it's not always easy to find out the exact details of who offers what – particularly when new hardware is surrounded by even more hype and technojargon than the latest games.

You may want to spend the rest of your life in joyous harmony with an Acorn Archimedes, but do you know what its screen resolution really is, or how many notes it can play? You may want to take part in the perennial ST vs Amiga argument, but where do you find the facts?

Here – and armed with this information you can bravely waltz into your local dealer and say 'I know what I want so give it to me'. It's also guaranteed to break the ice at parties.

For each machine we've listed:

■ *PRICE* (usually the recommended retail price), including VAT – unlike some reports. Computers are being sold with 'bundles' (software, joystick etc) more and more often, and prices change frequently. Sometimes particular high-street shops offer their own bundles, so shop around and watch TGM for advance reports.

■ *MEMORY* – don't be fooled by demos or publicity which show an apparently cheap machine running fantastically sophisticated software. Many computers – the ST, for instance – come in different versions with different memories, and because of chip prices, memory is currently very expensive. This is particularly important in packages using digitised graphics or sampled music.

Memory is measured in bytes, kilobytes (abbreviation K; 1K=1,024 bytes), or megabytes (abbreviation Mb; 1Mb=1,048,576 bytes).

A few expensive models have hard disks – literally that, hard disks built into the computer. They're useful for storing frequently-used applications software, because you can load from them much quicker than from a disk or tape drive ('external drive'). But for gamers, they're really a waste of money.

■ *PROCESSOR*. The important aspects of a processor are a) word length and b) speed. A high word length and high speed mean complex graphics can move very quickly (and number-crunching in applications like databases is speeded up too).

Word length is usually 8, 16 or 32 bits – a 16-bit machine can process twice as much information at one go as an 8-bit machine. Speed is measured in megahertz (MHz), which means 'million things done each second'.

So a machine like the Sinclair Professional PC, which has a processor running at 8 MHz, can do 8 million things every second – though each word takes several separate operations to process.

Most personal computers have one processor to make the software do its stuff; some, like the Amiga, also have 'dedicated' processors to handle graphics and sound, which speeds them up.

■ *RESOLUTION*, or the number of pixels on the screen. High resolutions mean more detailed, realistic graphics.

Resolution is measured with two numbers: number of pixel rows across the screen x number of pixel rows down the screen.

However, high resolutions can generally use fewer colours together on the same screen, because they take more memnoted how many colours are available onscreen at any one time.

■ *COLOUR PALETTE* – the total number of colours available on the computer (though not at the same time!).

■ *SOUND*. The important factors here are channels (the number of different pitches that can be played at a time) and pitch range (measured in octaves – an octave is the distance from, say, one C to the next on the piano).

More channels give a richer, less tinny sound.

■ *VIDEO*. Most games computers can be connected to the TV or to a monitor, via a lead which plugs into a port.

Today, most monitor output is the high-quality RGB standard. But some older machines (such as BBC and MSX micros) use composite video output, which doesn't allow such high resolution.

■ *SOFTWARE FORMAT*. Software comes on tape, disk or (for consoles) cartridge. Generally this isn't a factor in purchasing – if the machine is important enough, people will produce software for it. However, there are a few considerations . . .

Tapes are notoriously slow to load (and less reliable than disks). Amstrad's 3-inch disks are used only on their CPC, PCW and Spectrum +3 models, which means graphics, words etc stored on them cannot be used in another machine without communications software and hardware.

And if you buy a PC-compatible, try to go for one with a 3.5-inch disk drive – 5.25-inch disks are fast becoming unpopular, and the software supply in that format may dry up.

Also, if you're doing more than playing games, make sure the machine can format large-memory disks (all blank disks must be formatted before use). It could be frustrating to write a 450K masterpiece if all you've got is an Atari 520 STFM – yes, the memory can handle it, but disks formatted by this model can only take 360K of data.

Blank disks usually cost around £3.

■ *PORTS*. Joysticks, printers, modems, mice, MIDI music equipment, extra disk drives etc all plug into special ports. Make sure the model you choose has all the ports you need – and where salesmen are concerned, never take 'probably' for an answer.

■ *SOFTWARE*. It's obvious but . . . that incredibly fast, cheap new wonder is useless unless there are some games to run on it!

32-BIT

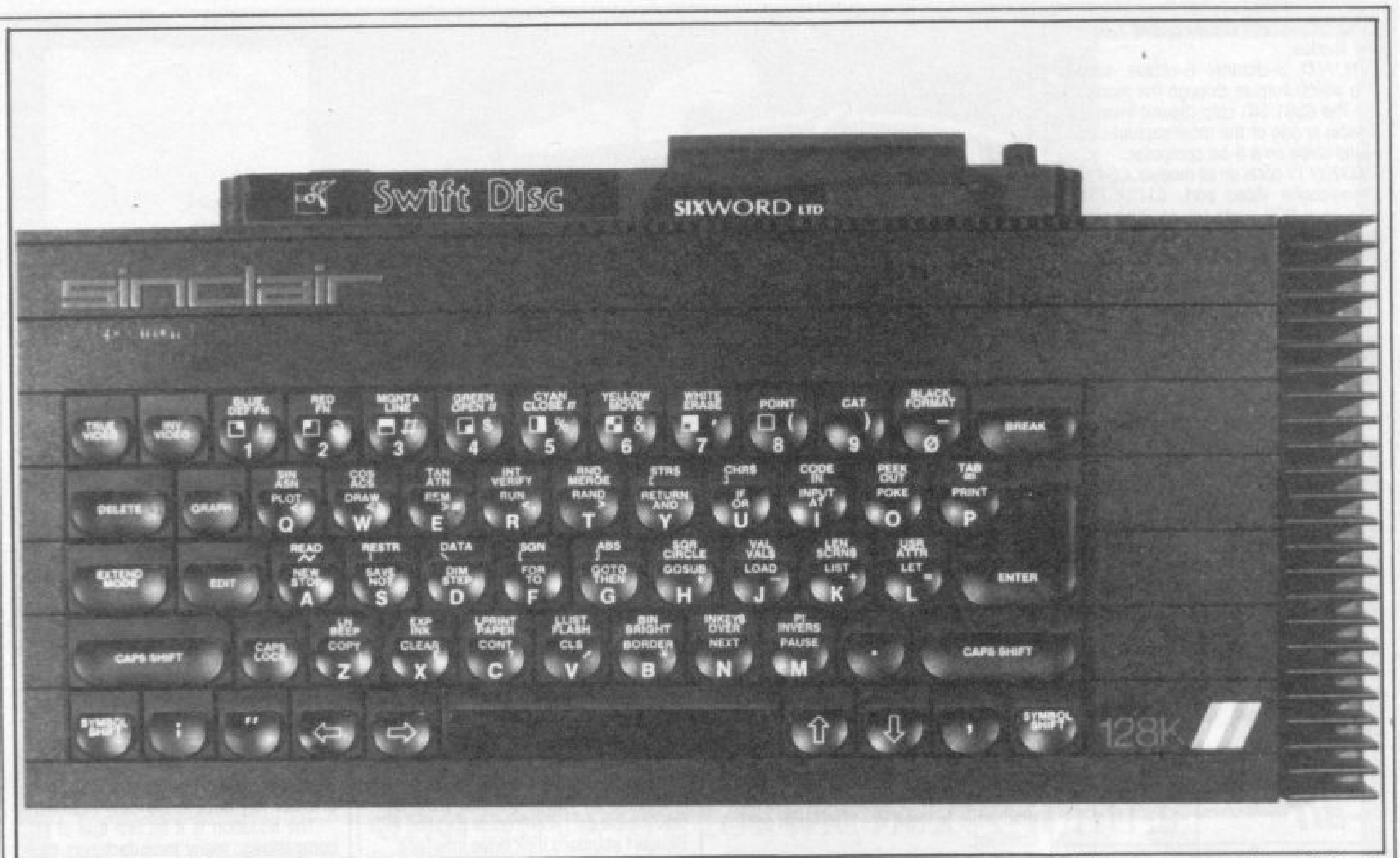
ACORN ARCHIMEDES

PRICE Cheaper models range from £801.60 for the Archimedes 305 – which includes the keyboard, mouse and one external disk drive – to £1,280 for the Archimedes 310M which also has a colour monitor and PC emulator (so it can run PC software).
MEMORY 305 models 512K, 310 models 1Mb.
PROCESSOR 32-bit Acorn ARM, 4 MHz. RISC (Reduced Instruction Set Computing) technology increases program speed but its real value is still debated.
RESOLUTION 320x256 (up to 256 colours onscreen), 640x256 (up to 16 colours onscreen) and 640x512 (up to 16 colours onscreen but needs a multisync monitor). Great potential for graphics.
COLOUR PALETTE 4,096 colours and shades.
SOUND 16 channels (8 left and 8 right). 6-octave range. One built-in speaker but stereo output is available. Excellent sound chip rivals many low-cost synthesizers.
VIDEO Composite video and RGB outputs. No TV output.
SOFTWARE FORMAT 3.5-inch disks. Formats to 800K.
PORTS 9-pin mouse socket. 3.5mm stereo jack. RS-423 serial. Centronics-compatible parallel. I/O interface for programs requiring input/output. IEC 320 video outlet. 64-way DIN. 41612 expansion port. But for MIDI a £79.35 expansion card is necessary.
SOFTWARE Despite gloomy talk, there are over 200 releases for the Archimedes – but only 13 games at last count! These include *Terramex* and the famous *Zarch*, both at £19.95 (some £14.95 titles available too). *Terramex* requires a 310 model, but most run on the 305. There are arcade and adventure construction kits, some impressive graphics software and essentially one music package (*EMR Arpeggio Music System*, £29.95).

16-BIT

ATARI ST

PRICE 520 STFM £299.99, 1040 STFM £599.99. Both have one built-in external disk drive. Often available with a lot of 'free' software. Also Mega ST2 (£1,034.99 with mono monitor) and Mega ST4 (£1,379.99 with mono monitor).
MEMORY 520 model 512K, 1040 model 1Mb, Mega ST2 2Mb, Mega ST4 4Mb.
PROCESSOR 16-bit Motorola 68000, 8 MHz.
RESOLUTION 640x400 in monochrome display, 640x200 in 4-colour display and 320x200 with 16 colours onscreen.
COLOUR PALETTE 512 colours and shades.
SOUND 3-channel 8-octave through TV or monitor.
VIDEO RGB. TV port on 520 model, and expected for future 1040 models.
SOFTWARE FORMAT 3.5-inch disks. 520 model formats to 360K, 1040 model to 720K.
PORTS 5-pin MIDI in and out. RGB. Serial modem. Two mouse/joystick ports. Cartridge. Second disk drive. Hard disk. TV port (only on 520 model at present).
SOFTWARE Support for the ST has been rapidly growing during 1988. Most



new 8-bit releases are now converted to the ST. Though the sound chip is poor compared with the C64 and the Amiga, the ST now dominates music software because of the built-in MIDI ports.

COMMODORE AMIGA

PRICE The Amiga A500 including one built-in external disk drive, 'free software' and a TV modulator is £399.99. Without software and modulator, they can be found cheaper if you shop around. The Amiga A1000 is only available second-hand. The Amiga A2000 starts at £1,489.25 including mouse. Packages including the A2000, a monitor and a hard disk are also available.
MEMORY A500 model 512K, A1000 model 256K, A2000 model 1Mb.
PROCESSOR 16-bit Motorola 68000, 7.14 MHz. The processor runs slightly slower than the ST's but specialist graphics, video and sound chips effectively make the Amiga faster than the ST for games.
RESOLUTION Several modes from 320x200 (32 colours onscreen) to 640x400 (16 colours onscreen). Some art packages offer an additional Hold And Modify (HAM) mode which allows all 4,096 colours onscreen.
COLOUR PALETTE 4,096 colours and shades.
SOUND 4-channel, 9-octave range. Stereo output through monitor, TV or hi-fi system. Built-in synthesizer 'speaks' typed-in text.
VIDEO No built in TV port but a modulator is available. RGB output to monitor.
SOFTWARE FORMAT 3.5-inch disks. Formats to 880K.
PORTS Audio left and right, two joystick/mouse, RS-232 serial, Centronics parallel, RGB, additional disk drive, monochrome video, expansion bus. No built-in MIDI port – a serious problem for musicians.
SOFTWARE More is coming out, but on the games front the Amiga is still behind the ST and 8-bit computers. Over 1,000 business and applications programs are available.

PC-COMPATIBLES

NOTE The original PC was produced by IBM in 1982. But though IBM are still the largest single PC producer, selling about 28% of all PCs, dozens of others produce 'compatibles' which run the same software and are often seen as better value.
PRICE Prices start from £343.85 (Sinclair Professional PC without monitor) and rise . . . as high as £9,000 (Compaq DeskPro 386).

Affordable models include Commodore PC1 (effectively the cheapest – £369.99 with mono monitor), Olivetti Prodest PC1 (£399 with mono monitor), and Amstrad PC1512 (£458.85 with mono monitor).

PCs are usually sold with monitors.
MEMORY From 256K upwards; at least 512K is recommended.
PROCESSOR PC-compatibles are usually described as 16-bit, but in fact there are 8-bit and 32-bit models as well. Early PCs used the 8-bit Intel 8088; most now use the 16-bit Intel 8086; and the expensive new generation uses the 16-bit Intel 80286 or 32-bit 80386.

Speed on cheap machines ranges from 4.77 MHz (eg Commodore PC1) to 8 MHz (eg Amstrad PC1640).
RESOLUTION Originally designed as a business machine, the PC had very basic graphics. But there are now three major PC colour graphics standards:

- CGA (Colour Graphics Adapter), at 320x200 (4 colours) or 640x200 (mono);
- EGA (Enhanced Graphics Adapter) at 640x200 ('200-line mode') or 320x350 ('350-line mode') (both 16 colours);
- and VGA (Virtual Graphics Array) at 640x480 (2-colour and 16-colour modes). But this is rare and expensive, and doesn't work with standard RGB monitors.

Some PC-compatibles have built-in CGA, EGA or VGA – check which – and add-on graphics boards (or 'display adapters') are now available from about £100.

There are also many other, rare standards, including Hercules and MDA – both mono only.

If you buy a PC with VGA or EGA and acquire the monitor separately, it's *very important* to check that the monitor supports the PC's graphics modes!
COLOUR PALETTE EGA 64 colours and shades, CGA 16.
SOUND One channel, but the speed of the processor allows pseudo-three-channel sound to be produced. Not designed as a music machine.
VIDEO No TV port. Output usually via RGB.
SOFTWARE FORMAT Older models mainly have one or two external drives for 5.25-inch disks, but 3.5-inch disks and drives are taking over. All drives format disks to 360K; some do more.
PORTS Vary from model to model. Most have expansion, RS-232 serial and Centronics parallel ports.
SOFTWARE Huge range of utilities – word processors etc (because about 25 million PC users worldwide). Also more games than you might expect, largely because of the many PC game-players in America. However, poor display and sound are problems and PC-compatibles are not recommended if you're only into games, graphics or music. If buying a PC for utilities, check which version of MS-DOS or PC-DOS operating system is supplied – a primitive version older than MS-DOS 3.2 or PC-DOS 2 may cause problems.

AMSTRAD CPC

PRICE The CPC464 (built-in tape deck) is £199 with green-screen monitor or £299 with colour monitor. CPC664 models are no longer produced. The CPC6128 (one built-in external disk drive) is £299 with green-screen monitor or £399 with colour monitor.
MEMORY CPC464/CPC664 64K, CPC6128 128K.
PROCESSOR 8-bit Zilog Z80, 4 MHz.
RESOLUTION 160x200 (up to 16 colours onscreen), 320x200 (4 colours) or 640x200 (mono).
COLOUR PALETTE 27 colours and shades.
SOUND 3-channel 8-octave through built-in speaker, but stereo output is available. Sound quality is reminiscent of early arcade machines. No MIDI ports.
VIDEO Monitor supplied with all models. RGB sync output.
SOFTWARE FORMAT Tape or 3-inch disk. Disk drives format to 180K on each side.
PORTS CPC464 has Centronics parallel, 6-pin DIN RGB with sync luminance, 3.5mm stereo socket, joystick, PCB extension port for disk drive and RS-232 serial interfaces. CPC664/6128 have Centronics parallel, 6-pin DIN RGB with sync luminance, 3.5mm stereo socket, joystick, cassette port, PCB extension port and second disk drive port.
SOFTWARE Most Spectrum and C64 games are converted to the CPC but they tend to run slightly slower. Also a good selection of word-processing, graphics and music packages.

COMMODORE C64/C128

PRICE C64 is £149.99 including dedicated Commodore cassette deck and ten games. C128D including disk drive £399.99.
MEMORY C64 64K, C128/C128D 128K.
PROCESSOR C64 8-bit 6510 2 MHz, C128/C128D 8-bit 6502 plus 8-bit Zilog Z80, 4 MHz.
RESOLUTION C64 320x200 (8 colours onscreen, but attribute system limits the number of colours that can be placed adjacent to each other). C128/C128D in 128K mode has a resolution of 640x200.

PRESS ANY KEY

COLOUR PALETTE 16 colours and shades.
SOUND 3-channel 8-octave sound chip which outputs through the monitor/TV. The 6581 SID chip (Sound Interface Device) is one of the most sophisticated sound chips on a 8-bit computer.
VIDEO TV ports on all models. C64 has a composite video port, C128/C128D both have RGB ports for an 80-column display.
SOFTWARE FORMAT Tape or 5.25-inch disk (C128D only). Two external 5.25-inch drives are available at extra cost from Commodore – the C1541 (formats to 140K) and the C1571 (formats to 340K). Blank disks very cheap but easily damaged.
PORTS RGB (C128/C128D), composite video (C64), two joystick ports, cassette, TV, expansion port, serial (nonstandard), user port.
SOFTWARE *The Commodore 64 is an old computer with years' worth of games and utilities, many imported from America. Many users, so new software likely to flow for some years yet. Z80 chip on C128/C128D allows it to run software written for CP/M operating systems (as found on Amstrad PCW8256 'Joyce', PCW9512, and CPC6128, and Spectrum +3).*



8-BIT

ACORN BBC

NOTE The BBC has appeared in many models: BBC A, BBC B, BBC B+, BBC Master Series and BBC Master Compact. Only the last two are now available. Listed below are the specifications for the BBC Master Compact.

Despite its name, the BBC range has always been produced by Acorn (who now do the Archimedes). But when the British Government decided to put computers in schools, they called on Auntie Beeb to provide a specification for manufacturers to work to – and Acorn got the contract.
PRICE Master 128 £458.85; Master Compact £396.75 on its own, £417.45 with TV modulator, £458.85 with mono monitor, £626.75 with colour monitor.
MEMORY 128K.
PROCESSOR 8-bit 65C12.
RESOLUTION Several modes, ranging from 160x256 (16 colours onscreen) to 640x256 (black and white).
SOUND 4-channel 6-octave output through internal speaker.
VIDEO Composite Video, RGB, optional TV modulator available.
SOFTWARE FORMAT Cassette and disk.
PORTS 50-way expansion port, joystick/mouse port, Centronics parallel, PCB Shugart standard disk drive interface.
SOFTWARE There's a vast range of educational software and applications, because until recently the BBC was the most common computer in British schools (it's now being overtaken by PC-compatibles and, occasionally, STs and Amigas). A few games still appear.

MSX-II

NOTE MSX and its successors, MSX-II and MSX-II+, are not brand names of actual machines – MSX is a compatibility standard, or a set of rules for designing computers, developed by Japanese inventor Kay Nishi in the early Eighties.

The situation is a bit like that of PC-compatibles: many manufacturers have produced MSX machines, but basically the same software runs on them all. The most famous MSX manufacturers are Sony.
PRICE Prices start from about £340 and rise according to model. The MSX-II+ (see TGM**014** news) is not yet availa-



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Afterburner	19.99	13.50	Federation Free Traders	29.99	22.95	R-Type	19.99	13.50	Baal	19.95	12.50	Lombard RAC Rally	24.95	15.50
Baal	19.95	12.50	Fish!	24.95	15.50	Rambo III	19.95	12.50	California Games	24.99	19.50	Manhattan Dealers	24.99	15.50
Barbarian II	19.99	12.50	Flying Shark	19.95	12.50	Return of Jedi	19.95	12.50	Captain Blood	24.95	15.50	Menace	19.95	12.50
Batman	19.95	12.50	Football Director 2	19.99	12.50	S. D. I.	19.99	13.50	Carrier Command	24.95	15.50	Munsters	19.99	12.50
Captain Blood	24.95	15.50	Football Manager 2	19.99	12.50	Sidewinder	9.99	6.40	Chrono Quest	29.95	18.50	Operation Wolf	24.95	15.50
Carrier Command	24.95	15.50	Galactic Conqueror	19.99	12.50	Soldier of Light	19.99	12.50	Corruption	24.95	15.50	Outrun	19.99	15.35
Chrono Quest	29.95	18.50	Helter Skelter	14.99	9.50	Space Harrier	19.99	12.50	Chukie Egg	19.95	12.50	Pac Mania	19.95	12.50
Chukie Egg	19.95	12.50	Hero's of the Lance	24.99	19.15	Speedball	24.99	14.99	Crystal Hammer	14.99	9.50	Pioneer Plague	24.99	15.50
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Crazy Cars II	19.99	12.50	IK+	19.99	13.50	STAC	39.95	25.90	Dragon Ninja	24.95	15.50	Return of Jedi	19.99	12.50
DT Olympic Challenge	19.95	12.50	Incred. Shrink. Sphere	19.99	13.50	Star Goose	19.95	12.50	Driller	24.95	15.50	Rocket Ranger	29.95	18.50
Double Dragon	19.99	12.50	Joan of Arc	19.99	15.35	Star Ray	19.95	12.50	Dungeon Master 1MB only	24.99	15.90	Roger Rabbit	24.99	16.90
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Driller	24.95	15.50	Lancelot	19.95	12.50	STOS	29.95	19.90	4×4	19.99	15.35	Spitting Image	19.95	12.50
Dungeon Master	24.95	15.50	Leaderboard Birdie	19.99	15.35	Super Hang On	19.99	13.50	Falcon	29.99	18.50	Starglider 2	24.95	15.50
Elite	24.95	14.90	Live & Let Die	19.99	12.50	Superman	24.94	15.50	Federation Free Traders	29.99	22.95	Super Hang On	24.99	16.90
			Lombard RAC Rally	24.99	15.50	Thunderblade	19.99	15.35	Fish	24.95	15.50	Superman	24.95	15.50
			Manhattan Dealers	19.99	12.50	Times of Lore	24.95	15.50	Football Director 2	19.99	12.50	Times of Lore	24.95	15.50
			Munsters	19.99	12.50	Tracksuit Manager	19.99	12.50	Football Manager 2	19.99	12.50	Thunderblade	24.99	19.15
			1943	19.99	15.35	Triad Vol I	29.99	18.50	Galactic Conqueror	24.99	15.50	Triad Vol 1	29.99	18.50
			Nebulus	19.99	15.35	Turbo Cup	19.99	12.50	Helter Skelter	14.95	9.50	Tracksuit Manager	19.99	12.50
			Oids	19.95	12.50	Verminator	24.95	15.50	Heroes of the Lance	24.99	19.15	TV Sports Football	29.99	18.50
			Operation Wolf	19.95	12.50	Victory road	19.95	12.50	Hostages	24.95	15.50	Turbo Cup	19.99	12.50
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ble in Britain.
MEMORY Models range from 64K to 256K.
PROCESSOR 8-bit Zilog Z80A, 3.57 MHz.
RESOLUTION Various modes: 512x212, 256x212, 512x424 (interlace).
COLOUR PALETTE 256 colours and shades. The MSX-II+ has 19,268 colours!
SOUND 3-channel 8-octave sound chip which outputs through monitor/TV.
VIDEO TV port and SCART plug for RGB monitors.
SOFTWARE FORMAT Tape, ROM cartridge or 3.5-inch disk.
PORTS Varies according to model but most include TV, Centronics parallel, two joystick ports, MSX expansion port, DIN plug to connect to cassette recorder, and cartridge port.
SOFTWARE Plenty of games and applications are available, but don't expect to find much in the high street. The most well-known MSX supporters in Britain are Konami, who run a users' software club – (0626) 56789.

MSX software is upwardly compatible – that is, software written for the MSX will run on the MSX-II and the MSX-II+ (but not vice versa!).

The MSX machines have the same BASIC programming language (called MSX BASIC, predictably enough) and the same Microsoft operating system (MSX-DOS).

SINCLAIR ZX SPECTRUM

NOTE The Spectrum, now manufactured by Amstrad, has appeared in many models: 16K, 48K, 48K+, 128K+, +2, +3 and +2A. Only the last three are now available new.
PRICE +2/+2A with built-in tape deck costs £139; +3 with one built-in external disk drive £199. Other models available very cheap second-hand.
MEMORY Mostly obvious from names! +2/+2A and +3 have 128K.
PROCESSOR 8-bit Zilog Z80, 4 MHz.
RESOLUTION 256x192 (eight colours onscreen, but only two colours can be used in any given 8x8-pixel block. This often causes 'colour clash' in games that use a lot of colour.)
COLOUR PALETTE 8 colours, can be increased to 16.
SOUND 128K+, +2, +2A and +3 have 3-channel output via monitor or TV. 16K/48K/48K+ have 1-channel output via built-in speaker.
VIDEO All have TV port. 128K+, +2 and +3 also have RGB ports.
SOFTWARE FORMAT Mostly tape. Early models load from ordinary cassette player (extra cost), +2 has built-in tape deck. +3 takes 3-inch disks though many people prefer to use tape because of disk-loading problems; one built-in reversible single-sided external disk drive can format disks to 180K each side.
PORTS 16K/48K/48K+ expansion port, two 3.5mm jack sockets to connect the Spectrum to a tape recorder and a TV port.

128K+ has expansion port, TV port, Vero phone connector for MIDI/RS-232 serial, two 3.5mm jack sockets, RGB port, Vero phone connector for add-on keypad.

+2 has expansion port, TV port, RGB port and Vero phone connectors as 128K+; also two nonstandard joystick ports and a 3.5mm socket for outputting sound.

+3 is as 128K+ and also has Centronics parallel printer port and port for second disk drive. Early +3s have two 3.5mm audio in/out jack sockets, later models have one which performs the same function. Also MIDI port on the later



models.

The recently-released +2A is technically virtually identical to the +3, apart from the fact that it has no disk drive. On the outside, it looks like a +2 except that it's black, rather than grey. However, it has several serious incompatibility problems and will not work with many +2 add-ons.
SOFTWARE The Spectrum is the biggest-selling home computer in the UK and (at an informed guess) at least 2,000 games are available. Until the growth of 16-bit this year, most of the great classics were Spectrum titles – many still are. A wide range of utilities is also available, but the machine is inadequate for graphics work. Slow/unreliable loading and small memory cause severe problems with any data processing (eg accounting, word processing).

CONSOLES

NINTENDO ENTERTAINMENT SYSTEM

PRICE The standard version includes console, game controller (used instead of keyboard/joystick) and one game at £99.95. The Deluxe version includes game controller, light gun, ROB (Robotic Operated Buddy) robot and two games at £149.95.
MEMORY Not known, but software cartridges are mostly 256K.
PROCESSOR 8-bit.
RESOLUTION 256x240 (up to 52 colours onscreen).
COLOUR PALETTE 52 colours and shades.
SOUND 3-channel sound including speech synthesis played through a TV.
VIDEO TV only. The Nintendo cannot be used with a monitor.
SOFTWARE FORMAT Special unerasable Nintendo cartridge. Despite some efforts by independent firms, no disk or tape software is available for the Nintendo. The Japanese-owned manufacturer once developed a disk drive but abandoned it because of piracy problems.
PORTS Game controller, TV, cartridge.
SOFTWARE Games only, £20-£25 each. So far little software has been released in the UK, though hundreds are available in Japan and the US (see Back Bytes, TGM012). *Nintendo now promise at least two new games per month in the UK – look for the TGM reviews.*

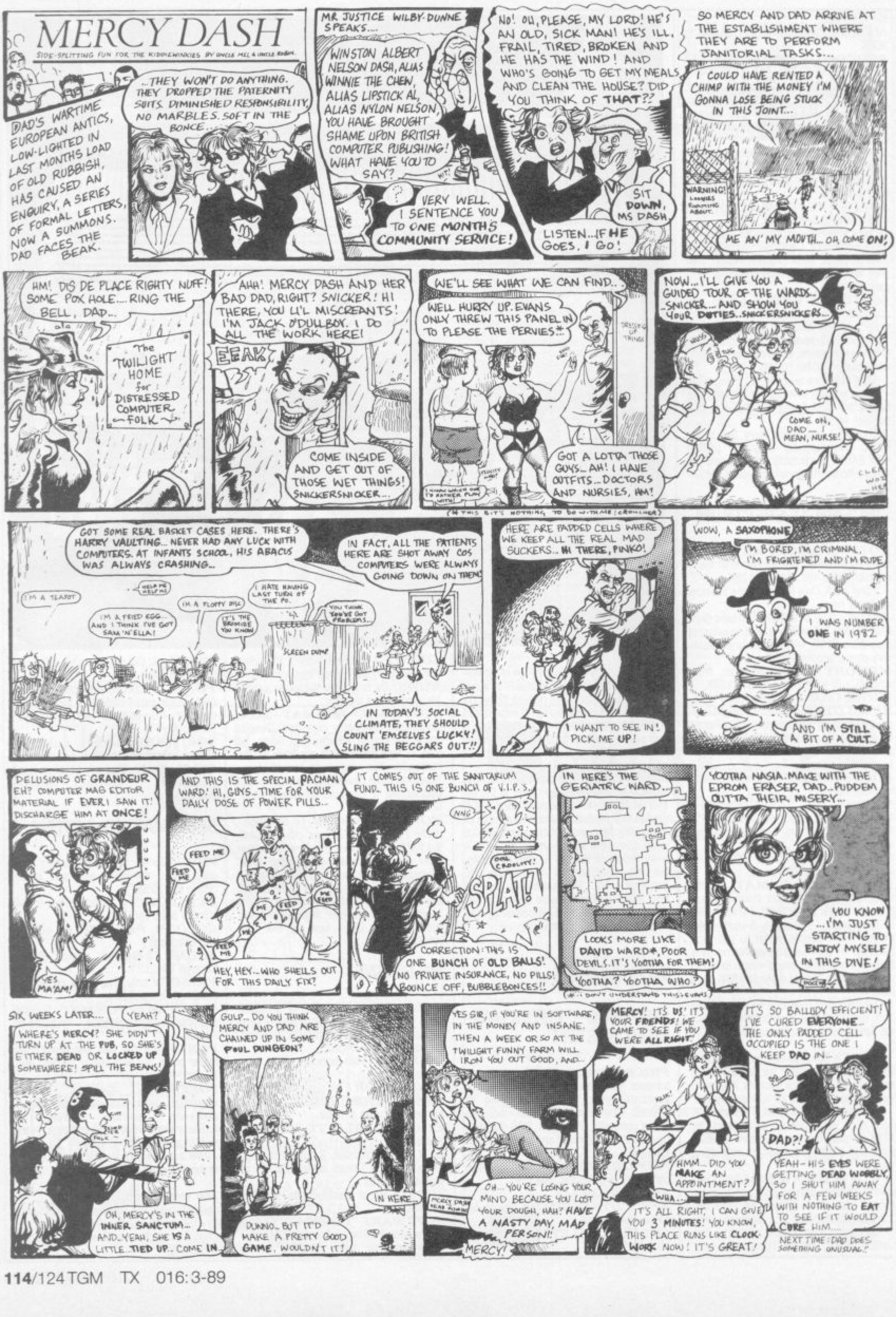
PC ENGINE

PRICE Entry level price of £199.95 buys you a PC Engine with a SCART connector (for use with a computer monitor), power pack and joypad.
MEMORY 1Mb onboard RAM plus video RAM.
PROCESSOR 8 bit custom chip.
RESOLUTION 256x216, up to 64 sprites onscreen at once.
COLOUR PALETTE 512 colours and shades.
SOUND 6-channel, 8 octave through TV or monitor. Stereo sound via HiFi or suitable monitor.
VIDEO TV or monitor (via supplied interface).
SOFTWARE FORMAT Special unerasable PC Engine 2-meg ROM cards – no tapes or disks. CD-ROM games (loaded from disks like music CDs) are also available.
PORTS Cartridge slot, one joystick port, large expansion port (possibly to connect PC Engines for two-player games).
SOFTWARE Games only. 20 titles are available so far at £29.95 each. Future titles are planned – contact Micromedia.

SEGA MASTER SYSTEM

PRICE Games console including light gun, game controller and one game retails at £79.95.
RESOLUTION 256x192 (up to 64 colours onscreen).
COLOUR PALETTE 64 colours and shades.
SOUND 3-channel sound played through TV.
VIDEO TV only. The Sega cannot be used with a monitor.
SOFTWARE FORMAT Special unerasable Sega cartridge – no tapes or disks,
PORTS Cartridge slot, two game controller ports (for two-player games) and TV port.
SOFTWARE Games only, mainly conversions of Sega coin-op games. After a lukewarm start, the Sega was selling like hot cakes in late 1988 and we predict good software support.

This section is updated every month and we make every effort to ensure the information is accurate. Let us know if we've missed anything!


MERCY DASH
SIDE-SPLITTING FUN FOR THE KIDDIEWINKIES BY UNCLE MEL & UNCLE ROBIN
DAD'S WARTIME EUROPEAN ANTICS, LOW-LIGHTED IN LAST MONTHS LOAD OF OLD RUBBISH, HAS CAUSED AN ENQUIRY, A SERIES OF FORMAL LETTERS, NOW A SUMMONS. DAD FACES THE BEAK.
..THEY WON'T DO ANYTHING. THEY DROPPED THE PATERNITY SUITS. DIMINISHED RESPONSIBILITY, NO MARBLES. SOFT IN THE BONCE...
MR JUSTICE WILBY-DUNNE SPEAKS....
WINSTON ALBERT NELSON DASH, ALIAS WINNIE THE CHEW, ALIAS LIPSTICK AL, ALIAS NYLON NELSON, YOU HAVE BROUGHT SHAME UPON BRITISH COMPUTER PUBLISHING! WHAT HAVE YOU TO SAY?
VERY WELL. I SENTENCE YOU TO ONE MONTH'S COMMUNITY SERVICE!
NO! OH, PLEASE, MY LORD! HE'S AN OLD, SICK MAN! HE'S ILL, FRAIL, TIRED, BROKEN AND HE HAS THE WIND! AND WHO'S GOING TO GET MY MEALS AND CLEAN THE HOUSE? DID YOU THINK OF THAT??
SIT DOWN, MS DASH
LISTEN...IF HE GOES, I GO!
SO MERCY AND DAD ARRIVE AT THE ESTABLISHMENT WHERE THEY ARE TO PERFORM JANITORIAL TASKS...
I COULD HAVE RENTED A CHIMP WITH THE MONEY I'M GONNA LOSE BEING STUCK IN THIS JOINT...
WARNING! LOONIES RUNNING ABOUT.
ME AN' MY MOUTH... OH, COME ON!
HM! DIS DE PLACE RIGHTY NUFF! SOME POX HOLE.... RING THE BELL, DAD...
The TWILIGHT HOME for DISTRESSED COMPUTER FOLK
AHH! MERCY DASH AND HER BAD DAD, RIGHT? SNICKER! HI THERE, YOU LI'L MISCREANTS! I'M JACK O'DULLBOY. I DO ALL THE WORK HERE!
EEAK
COME INSIDE AND GET OUT OF THOSE WET THINGS! SNICKERSNICKER...
WE'LL SEE WHAT WE CAN FIND...
WELL HURRY UP. EVANS ONLY THREW THIS PANEL IN TO PLEASE THE PERVIES*...
GOT A LOTTA THOSE GUYS...AH! I HAVE OUTFITS...DOCTORS AND NURSIES, HM!
(* THIS BIT'S NOTHING TO DO WITH ME: CROUCHER)
NOW...I'LL GIVE YOU A GUIDED TOUR OF THE WARDS... SNICKER... AND SHOW YOU YOUR DUTIES...SNICKERSNICKERS...
COME ON, DAD... I MEAN, NURSE!
GOT SOME REAL BASKET CASES HERE. THERE'S HARRY VAULTING... NEVER HAD ANY LUCK WITH COMPUTERS. AT INFANTS SCHOOL, HIS ABACUS WAS ALWAYS CRASHING...
IN FACT, ALL THE PATIENTS HERE ARE SHOT AWAY COS COMPUTERS WERE ALWAYS GOING DOWN ON THEM!
I'M A TEAPOT
HELP ME
I'M A FRIED EGG... AND I THINK I'VE GOT SAM 'N' ELLA!
I'M A FLOPPY DISC
I HATE HAVING LAST TURN OF THE PO.
IT'S THE BROMIDE YOU KNOW
YOU THINK YOU'VE GOT PROBLEMS...
SCREEN DUMP
IN TODAY'S SOCIAL CLIMATE, THEY SHOULD COUNT 'EMSELVES LUCKY! SLING THE BEGGARS OUT!!
HERE ARE PADDED CELLS WHERE WE KEEP ALL THE REAL MAD SUCKERS.. HI THERE, PINKO!
I WANT TO SEE IN! PICK ME UP!
WOW, A SAXOPHONE
I'M BORED, I'M CRIMINAL, I'M FRIGHTENED AND I'M RUDE
I WAS NUMBER ONE IN 1982
AND I'M STILL A BIT OF A CULT...
DELUSIONS OF GRANDEUR EH? COMPUTER MAG EDITOR MATERIAL IF EVER I SAW IT! DISCHARGE HIM AT ONCE!
YES MA'AM!
AND THIS IS THE SPECIAL PACMAN WARD! HI, GUYS... TIME FOR YOUR DAILY DOSE OF POWER PILLS...
FEED ME
HEY, HEY... WHO SHELLS OUT FOR THIS DAILY FIX?
IT COMES OUT OF THE SANITARIUM FUND. THIS IS ONE BUNCH OF V.I.P.'S.
SPLAT!
CORRECTION: THIS IS ONE BUNCH OF OLD BALLS! NO PRIVATE INSURANCE, NO PILLS! BOUNCE OFF, BUBBLEBONCES!!
IN HERE'S THE GERIATRIC WARD...
LOOKS MORE LIKE DAVID WARD*, POOR DEVILS. IT'S YOOTHA FOR THEM!
YOOTHA? YOOTHA WHO?
(* I DON'T UNDERSTAND THIS: EVANS)
YOOTHA NASIA. MAKE WITH THE EPROM ERASER, DAD.. PUDDEM OUTTA THEIR MISERY...
YOU KNOW ...I'M JUST STARTING TO ENJOY MYSELF IN THIS DIVE!
SIX WEEKS LATER...
YEAH?
WHERE'S MERCY? SHE DIDN'T TURN UP AT THE PUB, SO SHE'S EITHER DEAD OR LOCKED UP SOMEWHERE! SPILL THE BEANS!
OH, MERCY'S IN THE INNER SANCTUM... AND...YEAH, SHE IS A LITTLE TIED UP... COME IN.
GULP... DO YOU THINK MERCY AND DAD ARE CHAINED UP IN SOME FOUL DUNGEON?
IN HERE
DUNNO.. BUT IT'D MAKE A PRETTY GOOD GAME, WOULDN'T IT!
YES SIR, IF YOU'RE IN SOFTWARE, IN THE MONEY AND INSANE, THEN A WEEK OR SO AT THE TWILIGHT FUNNY FARM WILL IRON YOU OUT GOOD, AND...
OH... YOU'RE LOSING YOUR MIND BECAUSE YOU LOST YOUR DOUGH, HAH? HAVE A NASTY DAY, MAD PERSON!
MERCY!
MERCY! IT'S US! IT'S YOUR FRIENDS! WE CAME TO SEE IF YOU WERE ALL RIGHT!
HMM... DID YOU MAKE AN APPOINTMENT?
WHA...
IT'S ALL RIGHT, I CAN GIVE YOU 3 MINUTES! YOU KNOW, THIS PLACE RUNS LIKE CLOCK WORK NOW! IT'S GREAT!
IT'S SO BALLIDY EFFICIENT! I'VE CURED EVERYONE. THE ONLY PADDED CELL OCCUPIED IS THE ONE I KEEP DAD IN...
DAD?!
YEAH- HIS EYES WERE GETTING DEAD WOBBLY, SO I SHUT HIM AWAY FOR A FEW WEEKS WITH NOTHING TO EAT TO SEE IF IT WOULD CURE HIM...
NEXT TIME: DAD DOES SOMETHING UNUSUAL!

Playing the waiting game

Half the hyped-up products may never exist at all, says Robin Candy

In late 1987, ads appeared for *Attack Of The Mutant Zombie Flesh-Eating Chickens From Mars Starring Zappo The Dog* – the first game from Matthew Smith (*Manic Miner* for over three years. Fortunately for review headings everywhere, the game never appeared and we were all spared the *AOTMZFECFMSZTD* abbreviation.

Perhaps that was no great loss to mankind. But we've all seen the ads for new games and new machines which will change the face of computing and improve our very existence – if they're to be believed, self-actualisation can be yours for only £19.95. True, there may be delays along the way, but if it's worth having it's worth waiting for, right?

Unfortunately, delays have become a way of life in the micro world – sometimes the delays are of infinite length and the product never appears at all. And did it ever exist in the first place? It's become almost accepted that if you have a good idea one beery evening you immediately announce that it will be available on all major formats from Monday next, and rake in a little publicity. No need to actually produce it . . .

Probably the most infamous failure of this kind came from Imagine, before it was bought by Ocean. Back in 1984, *Bandersnatch* and *Psyclapse* were billed as the two most original games conceived (you betta believe it). Enhanced by a hardware add-on, they would change the face of gaming as we knew it.

It later transpired, after Imagine had crashed, that despite the glossy advertisement claims there was very little of the megagames to show. *Psyclapse* had progressed no further than a piece of paper, and though programming had begun on *Bandersnatch* it was far from finished;

Imagine weren't the only software house who tried to change the face of gaming with a hardware add-on. In 1985 Mikro-gen launched the Mikro-Plus, a device which increased the Spectrum's memory to 64K by overriding the ROM. Several games were planned but only one ever saw the light of day. *Shadow Of The Unicorn* was poorly received by both reviewers and public, and the Mikro-Plus and all follow-up games were scrapped. Even when a wonder product does appear, it may fall flat.

Revolution cancelled

In the battle of the consoles, the Flare One was all set to sweep away the opposition. RISC (Reduced Instruction Set Computing) processing, 512x256 screen resolution, built-in MIDI ports, a video/blitter chip all for around £200? It certainly looked impressive on paper.

Lots of paper, in fact: at least two major magazines with 'computer' as the second word of their title devoted glossy pages to rave reviews. TGM thought it sounded great, too, but we warned last year in TGM**010** that it 'won't be on the shelves this Christmas'.

Of course it wasn't, and though Flare Technology say it's still on the cards, it seems no manufacturer has been found yet. To Flare's credit, they did little of the hyping; that was left to the press, another guilty party in the merry-go-round of incredible nonhappening revolutions.

Interesting aside: the Flare One's designers formerly worked at Sinclair Research on the Loki, the mythical 'super Spectrum', which also looked good on paper and failed to materialise. Sir Clive Sinclair had long been known for talking himself into trouble with unkeepable promises; in his case, the problem was often that unforeseen technical difficulties arose.

Atari are more guilty than most at promising product and never delivering. The 256K ST was originally planned as a rival to the Spectrum and the C64 but was scrapped very early on. And we're still waiting for the Atari CD-ROM and ST Plus. Don't put too much money on the ST console appearing this summer as scheduled, either. Or Stacey, the portable ST; so many Atari machines are shown to selected software and retailing bigwigs at the major computer shows, put on the shelf, and shown around again the following year.

One-part trilogy

Back to games. Gargoyle Games's *Marsport* was critically acclaimed and well-received by the public, so two follow-ups were planned to complete a *Siege Of Earth* trilogy: *Fornax* and *Gath*.

Neither ever made it to the shops, because Gargoyle felt that the financial rewards weren't going to be great enough to justify the development time. So they launched the Faster Than Light label and concentrated on arcade games which took much less time to program.

Legal disputes are another threat. *Katakis* and *The Great Giana Sisters*, two excellent games from Rainbow Arts/US Gold, that didn't make it to the shops because of legal wrangles. Both were heavily advertised and both got rave reviews – that is, till the writs started flying. Electric Dreams objected to *Katakis*, saying it was too similar to their licensed *R-Type*, while Nintendo forced US Gold to withdraw *The Great Giana Sisters* because it resembled *Super Mario Bros*. However, neither *R-Type* nor *Super Mario Bros* can be described as original . . .

US Gold were too quick off the mark with another announcement when they proudly proclaimed in 1987 that James Dean, Marilyn Monroe and Charlie Chaplin were soon to be major computer games. Only the Chaplin title appeared, last year, and the software house quietly admitted that after acquiring the licences they'd decided Dean and Monroe were unsuitable for pixelisation.

This catalogue of cockups touches only a few of the software and hardware world's countless broken promises. All areas of computing are familiar with the problem; users had to wait so long for the latest version of Lotus Development Corp's spreadsheet *1-2-3* that headlines saying '6-7-8?' became a running joke.



Waiting is half the fun

PHOTO: Charlie Chaplin in *City Lights!* © Fotofolio, New York

But it was no joke to users who desperately needed it to improve their business, and the hype around games and games machines is no joke either – if only because it confuses the scene. Who knows what they should *really* save their cash for if half the products advertised are pure fantasy?

■ **Next month in TGM: 32-page Controversy pull-out section plus the astounding 64-bit parallel-processing supercomputer in an easy-to-assemble DIY kit – no soldering experience required!**
(Exact specification may vary according to availability of components.)

The Games machine

READER CLASSIFIEDS



PIRATES STAY AT SEA!

TGM will not knowingly place adverts for pirated software. In an effort to control the problem, we will not place any ad which doesn't include a full name and address. Box numbers and code names are unacceptable. Thank you for your cooperation.

WANTED

BETA Plus or BETA disk drive interface for Spectrum. Write to V. Vitovec, Pilestredet 31-811, 0166 OSLO 1, Norway

Video game magazines and game cartridges for Atari, Coleco, Vectrex, Intellevision, Sega, will buy or trade American magazines and cartridges. Let me know what you have. Originals only. Steven Burrage, BX1288, Orlando, Florida USA 32802

Wanted: games for Sega System, Wonder Boy, Rocky, Outrun, Space Harrier, Shinobi, Afterburner, any others considered. Please send list and prices to Stephen Salter, 16 Domby Road, Ipswitch, Suffolk IP2 0JS

FOR SALE

Atari ST original games for sale, Eliminator, Starglider II, Thunder Blade, Leatherneck £8.50 each or the lot for £30. Tel John Evenings/Weekends 01 391 4187

C64, C2N, Music Maker keyboard, over £650 worth of games including classics like Last Ninja II, Platoon, Bards Tale 1, Ikari Warriors, Gauntlets 1 and 2 and Predator. Bargain £300 call 0225 310291, Daniel after 4pm-Bath

Atari ST with over £130 worth of software and books including Gaunlet 2 and Epyx Epics only £260. Write to Grant Robson, 3A Castle Terrace, Bridge of Weir, Renfrewshire PA11 3EF

MEGA DEAL! Commodore 64C, datasette, three joysticks, 'Action Replay Mk4 Professional' cartridge, mouse, cheese, 30 games, all excellent condition. Worth over £400 sell for just £149. Don't be beaten to it – phone (0769) 80312 NOW!

CBM64, 1570 disk drive, 1702 colour monitor, two C2N's, double expert, thermal printer, all perfect condition £300 of games, total value £900 will sell complete £450 ono. Will seperate. Tel: (051) 263 8806 6pm-7pm

Sega System for sale. Still boxed. Games-Out Run, Choplifter, After Burner, World Soccer, Great Golf, plus Hang On. Very good condition worth £230 will sell for £65. Ring Durham (091) 3868401 any night. Genuine bargain!

Atari 520 STFM with built in 1 meg double sided disk drive, with STOS, mouse, joystick. Sell for £270.00 or swap for Amiga A500. Good condition. Tel: (091) 5262825 and ask for Michael

Nintendo with fun, five games £70. Phone 798 8241 ask for Lee. Only callers in Whitefield, Bury, Prestwich areas.

C64, boxed as new, 110 games (Op. Wolf, After Burner), tape recorder, music maker organ, joysticks, 40 mags, £180 or swap for working Atari STFM £70. Leyton-Stone, London. Phone Ian 556-9147

Atari 520 STFM with over £1500 worth of games including latest titles, still under guarantee and boxed with manuals, all for £450 or swap for Amiga. Contact Jason, 21 Drovers Place, Peckham, London SE15 2RP. Phone 635-9437

Commodore 128 computer 1 yrs old, excelerator plus disk drive, freeze machine cartridge, 2 data cassettes, loads of games, Salamander, Gauntlet, Helicopter, Gunship £250. Interested? Ring Ascot (0990) 25275 and ask for Paul

Atari 520 STFM, excellent condition with all leads, mouse, box, 18 boxed mint condition games including Carrier Command, Dungeon Master, Gauntlet II, Virus, Xenon; worth £375 will sell for £300 o.n.o. Phone Andy - Coventry (0203) 73398 8pm-9pm

Sega games system with 5 games including Hang On, Space Harrier, Ghost House, Fantasy Zone and Choplifter. All boxed very good condition only £100. Phone (0704) 24676 after 5pm

Two 48K Spectrums, microdrive, printer, interface, modem, data recorder, lots of software and magazines. Tel: 07375 51217 only £130

Spectrum +3, multiface 3, software worth £400, radio cassette, joysticks, books, mags, etc etc. Fully guaranteed, cost £1000, sell £300 o.n.o. Phone Lee on 0684 292093. No reasonable offer refused

Atari STFM, joystick, mouse, sharp colour TV, 18 games: Outrun, Virus etc. £300. No Offers. Tel:01 533 3664 after 5.00pm

MSX2 software for sale: games include Scramble Formation, Word Up, Wizards Apprentice, Deep Forest, Fantasy Zone, Laydock, Breaker for MSX only. All letters replied to: Please write to P. Jess, 58 Legacurry Road, Lisburn, Co. Antrim, BT27 5LZ N. Ireland

Commodore 64 plus datasette £80, also games worth over £300. All in excellent condition- will sell for £70 - Tel:Fleet (0252) 623141

C64 for sale, loads of games like Double Dragon and loads more, lots of magazines, 1 joystick, C2N, excellent condition, sell for £200. Tel Blackpool (0253) 697150 after 5pm

Swival/Tilt monitor stand £10, Amiga games, Black Shadow, Joe Blade, Tetris. Golden Path, Hacker 2, Quantox, 737 Flight Simulator, Jump Jet, £3 each or swap, P/Exchange anything for Amiga A500. Phone Steve (0429) 269344

Amiga A500, TV modulator, joystick, many games, one month old, £380. Write to Scott Lea, 285 Glascote Road, Tamworth, Staffs or phone (0827) 69406 after 7pm and ask for Scott. Ring Now!

Spectrum +2 , £200 worth of software includes Renegade and Out Run, Crash issues 38 to 60, also ZX81 10K all for £250 o.n.o. or swap for Nintendo and cartridges. Phone 01 959 2569 after 6pm

HUGE C64 system. C64, 2 datasettes, 3 joysticks, joyball, wizcard, grafix Tablet, lightpen, Action Replay MK4, well over £2,000 games (!), sound sampler system, 10 books, 60 mags more! Full list, phone 0925 753076 £350 BARGAIN!

CBM64, new cassette unit, new joystick, 6 games cartridges, paddles, 50 cassette games, including Hawkeyeyyyyy, Arkanoid, Wizball, Impossible Mission. All for £160. Tel: James on Wakefield (0924) 259 655 after 6pm

Atari ST software for sale, very latest £3 each, all originals. L. Seinstna, PO Box 6g. 2980 AD, Ridderkerk, Holland

Amiga games. Originals. Portal, Pacmania, Starglider, Speedball, Red October, Tass Times, Defender, Kings Quest 3, Golf, Baseball, Football, all £10. Zork 1, Zork 2, Suspended, Stationfall, Deadline, Starcross, Wishbringer all £8. Black Cauldron (Import) £20. Ring 0353 661080

Atari 520 STFM, one meg disk drive, upgraded one meg memory, mouse, joyball and games. Very good condition, leads inc. £320 or nearest offer. Phone 021 427 1084

Spectrum +3 for sale,one year old, very good condition with 20 disk games, joystick, multiface 3, tape recorder and 130 original tape games. Phone (0767) 315786 after 5pm £250

CBM 128 computer pack, CBM 4 computer pack 1901 colour monitor, leads included, Action Replay Mk3, Expert cartridge, over £1,500 of original software, over 40 mags, 5 joysticks, modem. Sell for £450 phone Sulaimon on (01) 986 6802 anytime between 3.45pm and 11.30pm

Amiga 500 brand new with modulator plus £300 original software inc. Rocket Ranger, Interceptor, Speedball and more only £350. Tel Rob Turton, (Birmingham) 554 5534 after 4pm

Amstrad 6128, colour monitor, disc drive, colour monitor, speedking joystick, lightpen, Dup 1 Printer, Pascal. Worth over £1250, offers around £495. Phone after 4pm (061) 483 9066 (Stockport)

LOOK HERE: CBM 64C for sale in perfect condition and games. Phone (1)

940 2644, 248 Kew Road, Richmond, Surrey

Commodore 64 software. Over £450 new. Sell for £100. Commodore 64 plus data cassette and pro 5000 joystick. Sell for £100, or sell both Commodore 64 and software for £170. Phone Langport 251366 (between 6pm - 9pm)

Yamaha CX5M 'best sound on any computer' (TGM 009), Music Composer, Voicing Program, Music Macro, selection of MSX games. Cost in total over £1,000. Will sell for £200. Phone Martin on (01) 5540436 after 7.30pm

Amiga A1000 (512K) plus 2MB expansion plus midi interface £650 ono Phone 01 859 2523 anytime

Commodore 64C, Hollywood TV pack bought Jan 89 unwanted gift under guarantee, paid £150.00 sell for £120.00. Phone Tilbury (Essex) 5991 (03752)

Software for Atari ST, over £360 worth including Virus, Carrier Command, Gauntlet II, Quantum Paint, Buggy Boy, Flight Simulator II etc. boxed and with instructions. Just £90 ono. Telephone (0295) 58980

Amstrad 464, colour monitor, great bargain, over £400 games latest include Total Eclipse, Gunship, F-15 Strike Eagle, Heroes of the Lance,Elite, Spy Vs Spy £200. Bargain phone Ian on (01) 200 9759 evenings. Don't miss this!

Amstrad CPC464, colour monitor, joystick, stereo speakers, multiface two, 100 mags, over 250 games (worth £1000) inc. Dark Side, Renegade, Out Run, Savage, R-Type, Operation Wolf. Worth £1650, sell for £450. Tel (0763) 71109

SWAPLINE

CBM 64, data recorder, joystick, £550 of software including Platoon, Combat School and 50 more brilliant titles. All in excellent condition, all together worth £700, will sell for £220 o.n.o. Phone 01 789 1364 evenings

Sega Master System still boxed includes over £250 worth of games including Choplifter, Quartet, Out-Run, Thunder Blade, Double Dragon, Shinibo, Transbot and others. Worth £350 sell for £200. Phone Steve on (Medway) Kent 0634 252958

Amiga contacts worldwide wanted to swap software, demos etc - write to: Martin Roberts, 8 Peter Tce, Castor Bay, Auckland 9, NZ. All letters answered promptly. New titles prefered. If necessary French, Russian, Indonesian also spoken

Computer 64 Swop Shop. Bored with your games, why not join our SWOP SHOP. All members receive our quarterly mag. SAE for membership. Send to: 64 Swop Shop, 3 Old Church Street, Aylestone, Leicester

PEN PALS

AMIGA OWNER needs contacts. Total reply service, write now! Not yet have you got my contract? No! well its B. Topping, 133 Longshaw Drive, Little Hulton, Manchester, UK M28 6BD. Now you can run off! Hurry up!

Amiga contacts wanted from all over the world. Write to: Marc Slabbinck, Heidelaan 12, 8200 Brugge, Belgium

Amiga FREAK wants contacts around the world for swapping hints, programs etc. For 100% guaranteed fast reply write to:Chas, 60 Hall Street, Southport, Merseyside, England (Write now! or regret it!)

Atari ST user seeks similar users worldwide to swap hints, tips etc. All letters will be promptly answered. Write to Grahm Munro, 16 Buchanan Ave, Bishopton. PA7 5ET Scotland

Want to swap Amiga PD, demos or games? If so write now to:- Matthew Burke, 33 Brook House Hill, Sheffield, S10 3ZB (send a blank disk along if you want some free PD software)

Amiga penpals wanted. I am interested in all types of software new games every week. Overseas welcome. Send letters, lists, disks to Stefano Gilardo, P.O. Box 2098, 40100 Bolongna, Italy. Tel: 01039 51/534581

IBM PC and compatibles. I want pen pals all over the world, to exchange games and programs. I've got a lot! Write to: Helge Loy, Storheia 62, 5046 Radal, Bergen, Norway

Amiga User wants contact with other Amiga users! Aim to swap tips, demos, and anything else for this mega machine! Contact Jonathan Morris, 187 Perrysfield Road, Cheshunt, Herts. EN8 0TL. Don't delay, contact me straight away!!!

Amiga owner wants contacts all over the world, especially C-Net members eg Plasma, Pazza, Woody and God. Write to Rambod, (Rammy) 386 Cathall Road, Leytonstone, London, E11 4NR England. I am not on C-Net now

Amiga contacts wanted around the world, to swap programs etc. Write to: Joginder, 40 Stanley Road, Southall, Middx. UB1 1PB or phone 01 571 9324

AMIGA owner wants Penpals from around the globe to swap demos, games, hints and tips. Send lists and disks to ALF, 22A Duporth Avenue,Maroochydore 4558, Queensland, Australia. I am looking for mainly European contacts

Amiga musician wants to get in touch with other Amiga musicians. If possible send anything you have made. For 100% reply write to: Orvind Grimstad, N6679 Kvisvik, Norway

Amiga penpals wanted to swap games, tips and also videos. New games every few weeks. Ring Andrew 0762 332034 or write 21 Festival Road, Portadown, Co Armagh, N. Ireland BT63 5HE

PC ENGINE owner wants to contact others. Anyone translate those japanese intructions? Write to Onn Lee, 125 Arnold Road, Bestwood Estate, Nottingham, NG5 5HR. I also have an Amiga! All letters answered

IBM compatible PC owner seeks penpals from all over the world to swap tips and programs. Write to Filip, Merel Straat 10, 9720 De Pinte, Belgium. All letters answered

Amiga contacts wanted, anywhere in the world. Please send disks, letters, lists to: Clint Geaney, 3 Macdonald Street, Rockhampton 4700, Australia, or call 6179 271213

Amiga & ST contacts wanted. Write to Mike, 8 Arnold Drive, Droylsden, Manchester M35 6RE, England. 061 301 1098.(Amiga) Alex, 30 Scott Road, Droylsden, Manchester M35 6RQ England 061 370 7008 (ST) 100% reply guaranteed

Atari ST pen pals wanted, all letters answered, write to John Sanderson, 19 Dearne View, Goldthorpe, Rotherham, South Yorkshire S63 9DP

Amiga User wants to get contacts all around the world. Please send a list and letter to Glenn Phillips, 69 Stanniland Street, Pakuranga, Auckland, New Zealand

Finnish Atari ST user wants to get contacts world wide, please write fast to: Jukka Kosonen, Kumau, 58700 Sulkava, Finland

USER GROUPS

MSX Link International user group for all MSX owners. Free monthly magazine. Link pen on 2nd year membership. For more details about MSX Link write to 11 Ayscough Avenue, Spalding, Lincs. PE11 2QB

Aurora Sierra the new Amiga users group. One step ahead of the best. For more info contact Dave or Kev at 20 Park Road, Hunstanton, Norfolk. PE6 5BP. Don't forget an SAE. Chow!

MSX Central (Computer Club). Looking for MSX look no further, MSX Central can help. Send a SAE to c/o David Krawczyk, 14 The Wardens Ave, Allesley Village, Coventry CV5 9GJ

Very cheap Public Domain Software, disks from 70p each! Beat that! Please phone (0226) 285330 or write to J. Lee, 11 Bradshaw Close, Barnsley, S75 2UN, South Yorks. Membership £2.50. Join first FREE game ST.

FANZINES

The Amiga, ST, C64, Spectrum and console magazine Computer Lynx has changed its name to Keybored. Still just 50p 20p P&P. From 187 Perrysfield Road, Cheshunt, Herts. EN8 0TL (contact the F.S.C.M. at the same address)

MISCELLANEOUS

Professional PBM soccer league. Fully computer moderated, features included league and cup games, transfers and international. Entrance Fee £4, subsequent turns £1.30 per fortnight. Write to: Grimsdale Games, 12 Aspen Way, Cringleford, Norwich, Norfolk. NR4 6UA

Behind the Lines. Amazing graphic adventures, puzzles and fun for everyone. Cheap too! Only £5.00 inc P&P, send cheque, PO to: Lee Martin, Impact, 27 Edward Road, Eastwood, Notts, NG16 3EU. Amstrad CPC machines. Cassette

New soccer PBM, computer controlled, ideal for beginner. So come on join now! Send SAE to: AJM Games, Amberley, Park Drive, Little Aston Park, Sutton Coldfield B74 2YA

Sex of either type can write for advice about earning money with a micro. For details send SAE to S.M. Johnson, 3 Danesmead Close, Fulford Road, York. YO1 4QU

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GUIDE TO INDEPENDENT REPAIR SERVICES

No matter how much you care for a computer, eventually something goes wrong. And you can bet your life it'll happen after the guarantee has expired, so you can forget about sending it back to the manufacturers. In most cases, they won't want to know.

So TGM has compiled a list of computer-repair firms together with details of the machines they service, cost, and warranty.

■ Before packing your computer off to a repair firm, check to see if your local computer dealer can recommend a local repair outfit. It's easier to deal with a local firm, because you can always go round and knock at their door.

■ Failing that, it's time to look at one of the firms in the TGM guide. Phone the company you choose and try and get a rough guide of the cost of the repair, how long it will take – and whether they'll give a warranty to do it again for free if the repair doesn't work.

■ Make sure that the quoted price includes parts, labour, VAT, and return postage.

■ When sending your computer by post, pack it carefully – preferably in the original box – or you could end up paying a lot more than you reckoned.

■ Always include a letter with your address, telephone number and the effects of the fault.

■ Send the whole package by recorded delivery – just 24p on top of the stamp cost – and pay the extra cash for an advice-of-delivery slip (25p if you ask for it when you post the package, 65p if you leave it till later).

That way you know it's got there, you can hassle the repair firm if they claim it's lost in the post, and you can sleep at nights too.

COMPANY **BCL (Best Computers Ltd).**
ADDRESS *Galaxy Audio Visual, first floor, 230 Tottenham Court Road, London W1A 3AP* ☎ (01) 631-0139 or 580-6640.
COMPUTERS REPAIRED All 8-bit and 16-bit models including PC-compatibles.
PERIPHERALS REPAIRED All.
PRICES A typical small repair would cost £15-£20.
WARRANTY Six months.
ADDITIONAL INFORMATION Free estimates. Galaxy Audio Visual also sell micros.

COMPANY **Cambridge Micro Surgery.**
ADDRESS *Unit 4, 377B Cherry Hinton Road, Cambridge CB1 4DH* ☎ *(0223) 410234.*
COMPUTERS REPAIRED Spectrum, Commodore, BBC, Amstrad, PC-compatibles.
PERIPHERALS REPAIRED Printers, monitors, disk drives etc.
PRICES Cheapest is 48K Spectrum at £18.95 plus cost of parts; others from £23.50.
WARRANTY Three months.
ADDITIONAL INFORMATION Will provide annual maintenance for business micros, on a contract basis.

COMPANY **The Computer Factory.**
ADDRESS *Analytic Engineering Ltd, Unit 18A, Grainger Road Industrial Estate, Southend SS2 5DD* ☎ (0707) 618455.
COMPUTERS REPAIRED All major models except Atari.
PERIPHERALS REPAIRED Disk drives and printers.
PRICES £7-£40.
WARRANTY Three months.
ADDITIONAL INFORMATION Free estimates.

COMPANY **Hindley Electronics.**
ADDRESS *97 Market Street, Hindley, Wigan, Lancashire WN2 3AA.* ☎ *(0942) 522743.*
COMPUTERS REPAIRED Spectrum, C16/64, Vic20, CPC.
PERIPHERALS REPAIRED Some.
PRICES Set price for each machine, ranging from £17 (48K Spectrum) to £25. 1541 disk drives £32.50.
WARRANTY Three months.
ADDITIONAL INFORMATION Average two-day turnaround – well quicker than the average.

COMPANY **HS Computer Services.**
ADDRESS *Unit 2, The Orchard, Warton, Preston, Lancashire PR4 1BE* ☎ (0772) 632686.
COMPUTERS REPAIRED All Spectrums.
PERIPHERALS REPAIRED Phone.
PRICES From £14.95.
WARRANTY Three months.

COMPANY **Ladbroke Computing International.**
ADDRESS *33 Ormskirk Road, Preston, Lancashire PR1 2QP* ☎ (0772) 21474 or 27236.
COMPUTERS REPAIRED Mainly Atari.
PERIPHERALS REPAIRED Printers and disk drives.
PRICES According to machine – for example ST £34.50, XL/130 XE £23 (these prices include VAT).
WARRANTY Phone for information.

COMPANY **MP Electronics.**
ADDRESS *Wendling, Dereham, Norfolk NR19 2LZ* ☎ (0362) 87327.
COMPUTERS REPAIRED Spectrum, C64, BBC B, PC-compatibles – in fact all major makes *except* ST and Amiga.
PERIPHERALS REPAIRED Printers, plotters, monitors, disk drives etc.
PRICES All-inclusive prices for most machines – 48K Spectrum £15, 128K Spectrum, BBC B and C64 £27.50, PCs from £20-£100+. These rates cover all faults *except* those caused by other people's botched repairs!
WARRANTY Phone for information.
ADDITIONAL INFORMATION Free estimates. £20 overhaul service for 48K Spectrums – MP Electronics replace sockets, keyboard membrane etc and will repair any faults that develop within six months of overhaul.

COMPANY **PM Engineering.**
ADDRESS *Unit 8, New Road, St Ives, Cambridgeshire PE17 4BG* ☎ (0480) 61394.
COMPUTERS REPAIRED All home computers.
PERIPHERALS REPAIRED Printers, monitors and disk drives.
PRICES Phone. There's a set repair price for each computer, regardless of the fault and including all parts and labour.
WARRANTY Three months.

COMPANY **RA Electronics.**
ADDRESS *133 London Road South, Lowestoft, Suffolk, NR33 0AX* ☎ (0502) 566289.
COMPUTERS REPAIRED All Spectrums.
PERIPHERALS REPAIRED Phone.
PRICES Spectrum 48K £14, Spectrum 128K £20.
ADDITIONAL INFORMATION RA Electronics also sell components.

COMPANY **Roebuck Designs.**
ADDRESS *Victory Works, Birds Hill, Letchworth, Hertfordshire SG6 1HX* ☎ (0462) 480723 or 480929.
JOYSTICKS REPLACED Roebuck Designs run a clever joystick-replacement service which offers faster turnaround than a repair firm might.

Send in your broken joystick – any model – and they'll send back a second-hand but working stick of the same model. Later, they repair yours and pass it on to another customer.
PRICE £4.50 including return postage.

COMPANY **Swindon ITEC.**
ADDRESS *6 Oppenheimer Centre, Greenbridge Road, Swindon SN3 3JD* ☎ (0793) 611808.
COMPUTERS REPAIRED Spectrum, Commodore 64/128, BBC B and Master series, CPC.
PERIPHERALS REPAIRED 5.25-inch disk drives, monitors, cassette-deck alignment.
PRICES Spectrum from £18, others from £25 (but small repairs may be cheaper).
WARRANTY Three months.
ADDITIONAL INFORMATION Most repairs should be done within seven working days.

COMPANY **Verran Micro-Maintenance.**
ADDRESS *Albany Park, Frimley Road, Camberley, Surrey GU15 2PL* ☎ (0276) 66266.
COMPUTERS REPAIRED Spectrum, Amstrad, Commodore.
PERIPHERALS REPAIRED Printers, monitors.
PRICES Range from £19.95 for Spectrum to £95 for Amstrad PC1512.
ADDITIONAL INFORMATION Established six years. Approved by Amstrad.

COMPANY **Video Vault.**
ADDRESS *140 High Street West, Glossop, Derbyshire SK13 8HJ* ☎ (04574) 66555.
COMPUTERS REPAIRED Most.
PERIPHERALS REPAIRED Phone.
PRICES From £19.95, according to machine.
WARRANTY Three months.
ADDITIONAL INFORMATION While-you-wait service in Manchester.

COMPANY **VSE Technical Services.**
ADDRESS *Unit 6, 8 Nursery Road, London SW9 8BP* ☎ (01) 738-7707.
COMPUTERS REPAIRED All Spectrum, Amstrad, Atari and Commodore models.
PERIPHERALS REPAIRED Opus Discovery drive (partner Ian Vaudrey is official repairperson for the Sinclair Discovery Club).
PRICES Each model has a set price which covers all repairs except very major ones like keyboard or disk-drive replacement. Spectrums range from £12.90 to £17.90; C64 is £19.90, C128 £24.90; CPCs range from £21.90 to £24.90; all PCWs are £31.90.

Parts, labour, VAT and return postage within the UK are all included.
WARRANTY Four months.

Attention repair firms: If you would like a mention in the Back Bytes Repair page, please send the relevant details to Back Bytes, TGM, *PO Box 10, Ludlow, Shropshire SY8 1DB*, including a phone number and the manager's name (for our files).

Console-ation

Finding a good console repair shop is a lot harder than getting the computer fixed – simply because there's not so much demand. But **Telegames**, which sells joysticks and games for most major consoles, now offers a repair service too.

There's a 90-day guarantee, and what's better, Telegames guarantee a three-day turnaround! They're also the official UK repair centre for Sega and Colecovision.

Prices, which include parts, labour and VAT, are £17.95 for Atari 2600, £14.95 for Colecovision, £19.95 for Intellivision, and £14.95 for Sega. Add £2.50 for return postage.

Telegames: *Kilby Bridge, Wigston, Leicester LE8 1TE* ☎ (0533) 880445 or 813606.

UNCLE MEL'S TRIVIA QUIZ

1) Who were Commodore's sponsored football team and tame javelin-thrower, and what happened to them?

2) What did Nintendo manufacture before consoles?

3) How many actors does it take to change a floppy disk?

4) In the last 12 months, the cost of DRAM chips has increased by: *a)* 300%, *b)* 100%, *c)* salt'n'vinegar.

5) Why was *Sinclair User* trashed on the BBC's *Watchdog* programme?

6) Unscramble some software houses from this Spanish menu: 'El Rred Meat Sicc', 'Las Prey', 'El Vine Ratta'.

7) In April, a £100,000 Swiss robot named Toughie will be challenged by a £100 English robot named Charlie. What form will the combat take?

8) CDS man Dave Carlos has quit the software industry to become: *a)* a sand dancer, *b)* unemployed, *c)* a Christian missionary.

9) How much onboard memory do you get on the new Amstrad VC100?

10) What are Big Blue, Big Apple, *Big K*?

11) True or false? *Spycatcher*, the book Margaret Thatcher tried to ban, is about to become a computer game.

12) Who will benefit from the 1989 British software industry's charity compilation: *a)* autistic children, *b)* artistic children, *c)* the software industry?

13) TGM is edited in: *a)* Ludlow, *b)* lager, *c)* just under three minutes.

14) Why are Amstrad 3-inch disks called 'discs'?

15) Eric Forth is: *a)* Clapton's great-grandson, *b)* a Scandinavian programming language, *c)* invisible.

16. Which country in the United Kingdom has the most computers per head?

17) What was remarkable about Mercury Records's release of Tchaikovsky's *1812 Overture* in 1956?

18) Fill in the missing numbers from these science-fiction classics: *Fahrenheit XXX*, *Slaughterhouse X*, *Saturn X*, *XXXX A Sex Odyssey*.

19) What did Domark's Mark Strachan auction for 500 quid?

20) What will a Scuzzy interface do for an ordinary 3.5-inch disk?

ANSWERS

1) Chelsea FC got relegated, Tessa Sanderson failed to compete at the Olympics.

2) Playing cards.

3) Ten – one to change it, nine to squeak 'that should be me up there!'.

4) *a)* 300%.

5) For supposedly encouraging its readers to sniff glue!!

6) Electric Dreams, Players, Alternative.



◆ *Honest to God, what's Dave doing? See question 8.*

7) Table tennis (at the Edinburgh Festival of Science & Technology).

8) *c)* A missionary, and may God bless him.

9) One hour, it's a camcorder.

10) IBM, a software house with big talk but precious few releases, a long-defunct computer rag.

11) True – Croftward has bought the rights.

12) *a)* Autistic children.

13) Correct.

14) Because they're cheapskates. A spelling mistake on the CPC464 mould would have cost £200 to correct!

15) *c)* He's the British Minister for Information Technology.

16) Wales.

17) It was the first commercial stereo record (though experimental stereo had been recorded on January 19 1934!).

18) 451, 5, 3, 2069.

19) His kilt.

20) Cram 21MB of information onto it.

HOW DID YOU DO?

Score one point for each correct answer!!!

0 points Congratulations! You should present Channel 4 programmes on computer games.
1-10 points You are average. Amstrad was built on hardware-designers like you.
11-19 points You are pretty good, but you do make mistakes. Join Atari.
20 points You cheated. You will go far in the City, or advertising the Amiga.
over 20 points You have revolutionised mathematics. You win an abacus.

SEGA HOTLINE COMPETITION

Winner receives a Sega Master System plus a bundle of Sega goodies. **Craig Brown**, Middlesex HA0 2LS. Ten runners up each receive Sega T-shirts. They are:

Peter Silcock, Basingstoke, RG27 9QP. Simon Cripps, Middx, TW13 5BP. Martin Flatt. Suffolk, CB9 7PW. John Hughesman, London SE16 2QF. Zak Pearce, London SE18 3SY. David Pickett, Bucks HP15 6NP. Ben Cahill, Staffordshire ST18 0SE. Matthew Ducker, Kings Lynn, Norfolk. Richard A Smith, Leicestershire LE17 4XB. Adam Brown, Harrow.



EPYX COMPETITION

Winner receives an Amiga A500. **Mr A E Ward**, Clwyd LL28 4YH.

20 runners up each receive copies of *The Games Summer Edition*. **John Quine, Belfast BT15 2BT. Paul Mangan, York YO3 7AY. A Bogue, Stourport DY13 8QB. David Peters, London W13 0HB. Kolin Robertson, Lincs PE12 9AQ. Kate Mead, London E8 3ES. Robert Wisbey, Herts HP3 9NN. Shaun Brown, Coxford SO1 6GJ. Jonathan Williams, Glos GL7 3DB. Ben Thorne, London SE9 3EA. Simon Spong, Staffs B78 1EF. Stephen Harcourt, Essex CM20 3JB. Bairaj Ghataore, Warwickshire CV32 7TA. Dean Smith, Manchester M13 0UF. Ofir Galmor, ISRAEL 47203. M Pegg, Milton Keynes. Martin Dodd, Clwyd CC14 2DN. E Masaba, Liverpool LS5 3JH. S K Jagtiani, Surrey SM7 2BX.** And who wrote in with *Great Moments In History*, featuring Stonehenge, Swim The Channel and Space Walking? We've got your prize, all we need is your address!

WHO DARES WINS WEEKEND

Two winners receive places on an all-action Who Dares Wins weekend. They are: **Dene Landuch**, West Midlands. **Paul Speed**, Lincoln LN6 0NU.
Ten runners-up receive a copy of an Infogrames game choosen from *Hostages* or *Action Service* on ST, Amiga or PC, or *Captain Blood* on 8-bit formats.

Chris Garbutt, Essex SS13 1RR. Barry Wooffitt, York YO1 4DA. B Brand, Perth PH1 5RN. Kolin Robertson, Lincs PE12 9AQ. Mr Andy Warwick, London SE22 9AQ. Mr J Clark, Scotland AB5 1SR. Mr M Collins, London NW1 8NB. P D Mummery, Norfolk PE30 3PY. Malc Sims, Kent CT1 1YF. Mr D Perrin, Middx UB5 4LR.

The Games machine

NEXT MONTH

THE GAMES MACHINE
APRIL 1989
OUT MARCH 23

The shape of things to come





■ It's mega, it's from Japan, and it's arrived! Way back in the mists of time (TGM008 to be precise), TGM was the first to bring you exclusive news on the remarkable all-singing all-dancing console from the land of the rising sun – the PC Engine.

■ In the computer entertainment industry, when the going gets tough, the tough get out. Mel Croucher asks leading figures why they left when they did.

■ From classical to pop, TGM investigates the use of micros in the professional music studio.

■ Kapow! Thwack! Ooer! From high-selling magazines to the computer screen, TGM delves into the wonderful world of comics.

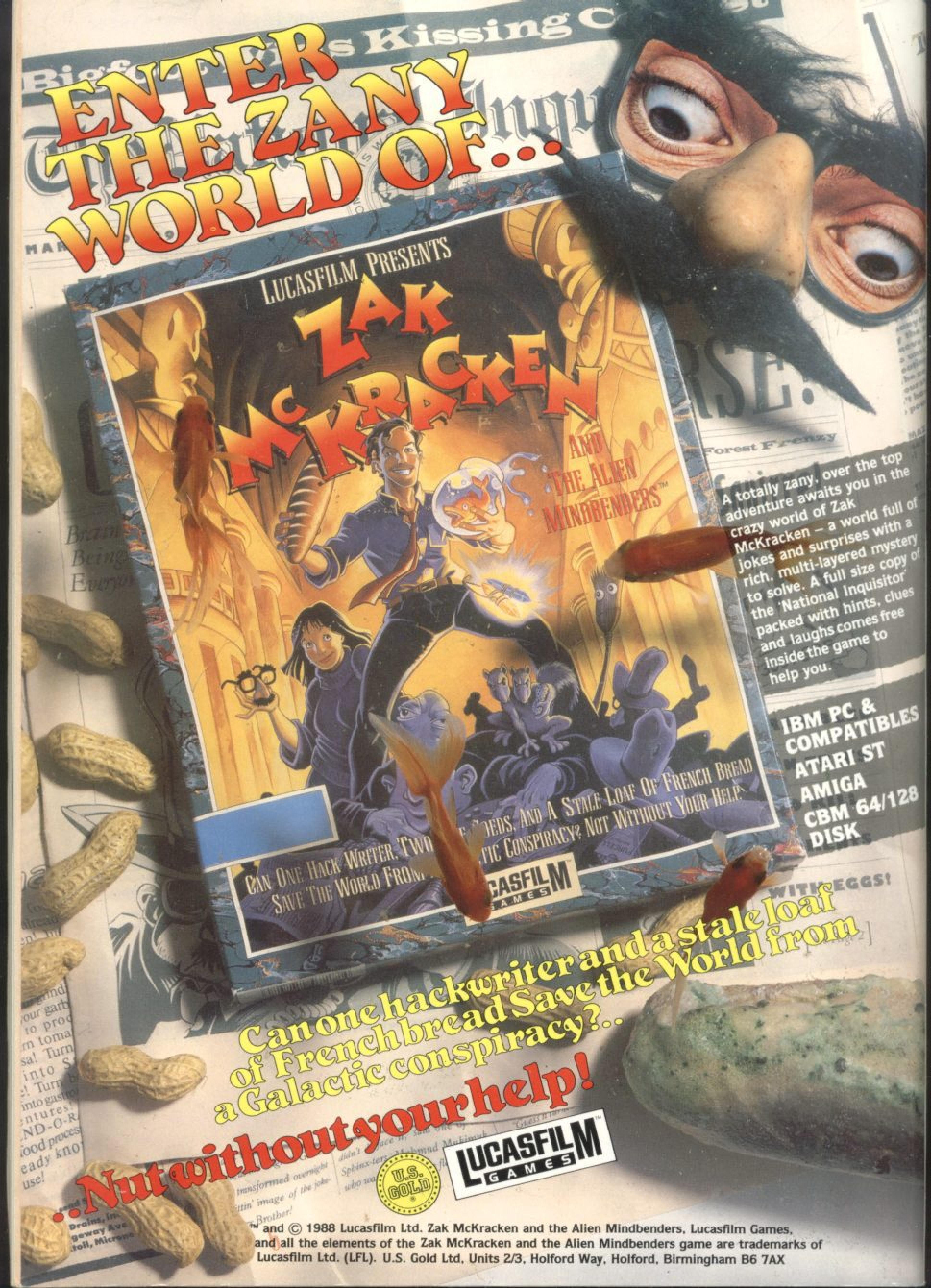
■ Games: the full reviews

■ Competitions

■ Charts

■ Back Bytes: programming in detail

TGM017 will be on sale from March 23. Miss it and you've only yourself to blame.


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